

August 28, 2014

To the Hearing Officer in the matter of proposed additional regulation of Stage II systems:

Good evening, I am **Gary B. Patterson**, a registered representative for the American Petroleum Institute, the oldest and largest American petroleum industry trade association with over 600 members known for nearly a century for the establishment of best practices and standards covering all aspects of petroleum products discovery, production, refining, transportation and retailing.

On behalf of the Institute we take issue with the proposed regulation and the absence of any provision for a waiver of Stage II requirements for new construction or major renovations at existing gasoline dispensing facilities. My industry has been asking that action of the Air Quality Division for over three years and are dispirited that this proposal attempts what no other state east of the Rockies has done. by coupling that with an untested and expensive technology.

In Arizona that enforcement discretion was provided on February 27, 2014; in Connecticut in February of 2012, in Florida they were exempted, in Georgia regulation no longer requires Stage II, in Illinois a decommissioning rule was adopted in December 19, 2013. In Indiana enforcement discretion was authorized in April of 2013, in Maine Stage II requirements were repealed in January of 2012, in Massachusetts an August 2012 enforcement discretion strategy was published followed by a more detailed decommissioning policy in June of 2013 and a proposal for a continuous pressure monitoring system was studied and rejected. In Missouri, the show me state, decommissioning was allowed as of March, 2013 and in New Hampshire where they promise to breathe free or fight, Stage II must be decommissioned by December of 2015. Not to belabor the point but the rest of the alphabet of states; New York, North Carolina, Ohio, Pennsylvania, Rhode Island, Tennessee, the pristine state of Vermont, Virginia and Wisconsin all have adopted a repeal or some form of enforcement discretion. What do we know in Delaware that those state do not or what lesser life value do ~~those~~ <sup>we think</sup> regulators and legislators ascribe to their residents?

I have participated in many productive and reasonable regulatory development initiatives on behalf of my industry and with DNREC staff for nearly three decades and the final product normally reflects good science, good economics when possible and good sense. All three are missing here.

We know that your task is a difficult one and that the Secretary's concurrence is necessary and request that you recommend setting aside this proposal and ask your counterparts to return to the table to examine the experiential data that has been shared since July i with the Air Quality staff members and allow the industry-volunteered testing under "Delaware conditions" to go forward.

**DELAWARE STATE  
CHAMBER OF COMMERCE**

Mark S. Stellini, Chairman  
A. Richard Heffron, President

Mr. David Small  
Secretary  
Department of Natural Resources and Environmental Control (DNREC)  
Richardson & Robbins Building  
89 Kings Hwy  
Dover, DE 19901

August 27, 2014


Dear Secretary Small,

On behalf of the Delaware State Chamber of Commerce, I am writing in opposition to the Department's proposed regulations related to Stage II Vapor Recovery that could cost Delaware service station owners/operators upwards of \$50,000 per station. Currently, only one state in the U.S., California, mandates a continuous pressure monitoring system related to Stage II Vapor Recovery. No other state, including those on the East Coast, has found a compelling reason to institute such a mandate, with the state of Massachusetts going so far as releasing a report to that affect. In addition, no testing or other fieldwork has been conducted in Delaware related to the issue of State II Vapor Recovery prior to the release of the proposed regulations. The Air Quality Division has instead relied upon an outdated equation for calculating potential vapor release that is fundamentally unable to account for the changes in reformulated gasoline or the changes in the service station industry, and therefore should not be used as a tool to set policy.

We urge DNREC to instead adopt the EPA's decision allowing states to remove Stage II Vapor Recovery because the vast majority of vehicles on the road have onboard canister systems making the proposed regulations not only redundant, but unnecessary.

The State Chamber of Commerce looks forward to working with DNREC on this issue and others as they relate to the Delaware business community.

Regards,

  
A. Richard Heffron



**Mark Baker**

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**From:** Mark Baker  
**Sent:** Tuesday, January 29, 2013 8:37 AM  
**To:** 'Rittberg Alex (DNREC)'  
**Subject:** RE: Stage II vapor recovery

Alex,

I wanted to follow up on our discussions involving Stage II vapor recovery. When I sent you this email back in May I had intentions of installing new dispensers in the fall. This was pushed back, but it is still something that I would like to do sometime this spring. The dispensers would be for my site in Georgetown and it is the site that I used as an example in my comments that I submitted to DNREC as part of the regulation review process that was just completed.

I think that in one of our phone conversations on the issue you mentioned that there was at least the possibility of receiving a waiver for the Stage II requirement or perhaps taking part in what would be considered a test. I would like to explore our options in that regard before I make firm plans to upgrade the dispensers. Do you think that there is any chance of this occurring? If you would like to talk about it please give me a call. Thank you for your consideration,

Mark Baker  
Wilson Baker Inc.  
302-684-8569  
[www.bakerpetroleumde.com](http://www.bakerpetroleumde.com)

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**From:** Rittberg Alex (DNREC) [<mailto:Alex.Rittberg@state.de.us>]  
**Sent:** Monday, May 14, 2012 1:36 PM  
**To:** Mark Baker  
**Cc:** Wayne Baker; Crofts Marjorie A. (DNREC); Mirzakhalili Ali (DNREC); Fees David F. (DNREC); Gao Frank F. (DNREC)  
**Subject:** RE: Stage II vapor recovery

Mark,

Thanks for sharing the information about EPA's press release. Delaware is in an Ozone Transport Region (OTR) State, therefore Delaware has more federal requirements that we need to meet before we can remove Stage II vapor recovery equipment, and change our regulations so it is no longer a Volatile Organic Chemical control requirement. Our Air Quality Division is currently performing air modeling to demonstrate that there is a benefit to removing Stage II equipment in Delaware. Based on preliminary modeling results, it may not prove to be a benefit in Delaware until 2017 or 2018. Our Air Quality Division is also working with EPA with regards to determining the comparable control measures that will need to be put in place in Delaware to achieve the same emission reductions currently provided by Stage II systems. It's my understanding that if comparable control measures are put in place, then Delaware may be allowed to remove Stage II requirements earlier than 2017-2018 date. These issues are still being worked out between EPA and our Division of Air Quality, and we currently do not have a timeframe for decommissioning Stage II equipment, nor a policy relating to not requiring Stage II equipment at new installations or when dispensers are switched out. Unfortunately it's the status quo until we get further in discussions and obtain the necessary approvals from EPA. Thanks for your understanding in these matters.

Alex

**From:** Mark Baker [<mailto:Mark@wilsonbaker.com>]  
**Sent:** Friday, May 11, 2012 10:54 AM  
**To:** Rittberg Alex (DNREC)  
**Cc:** Wayne & Frances Baker  
**Subject:** Stage II vapor recovery

Alex,

In light is this recent ruling by the EPA, where does Delaware stand regarding Stage II vapory recovery?

<http://www.epa.gov/air/ozonepollution/pdfs/20120509fs.pdf>

I have to admit I don't fully understand the different areas mentioned (OTR, ozone non-attainment area, etc) and how Delaware fits in them. However, with the EPA now ruling that onboard refueling vapory recovery is in "widespread" use, I can not begin to justify the installation of a new Stage II system or any new Stage II equipped dispenser.

I plan on installing new dispensers in at least one of my facilities this fall. It would not be right for DNREC to require me to install Stage II equipment. Hopefully Delaware will act quickly to eliminate this expensive, outdated burden on its motor fuel retailers.

Mark Baker  
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June 9, 2014

The Honorable Debra J. Heffernan  
State Representative  
Chair  
House Natural Resources Committee  
Delaware General Assembly

Dear Representative Heffernan:

Thank you for the opportunity to provide testimony on the Mid-Atlantic Petroleum Distributor's Association's (MAPDA) suggested amendments to HB 367, which aim to provide relief from existing regulatory requirements for gasoline dispensing facilities to install, operate and maintain Stage II vapor recovery equipment.

As discussed at your recent House Natural Resources Committee hearing, we have several concerns about the amendment as drafted:

The proposed amendment circumvents a robust stakeholder process that is underway and close to completion. The Division of Air Quality began a stakeholder process in October 2013, which includes MAPDA and its members. Our intent is to formulate regulatory changes that would identify the gasoline dispensing facilities' future requirements in lieu of Stage II that are less costly than Stage II, provide flexibility to the industry, and provide for necessary emission control. We are in the final stages of development and MAPDA should be encouraged to continue participation in that process.

Our current schedule is to have a second draft of regulatory language available for stakeholders' review by June 25, 2014. We intend to finalize our proposal by July 15, 2014 for publication in the Delaware Register by August 1, 2014. We hope to hold a public hearing in late August, which would mean that we can finalize the regulation by late September. This is the same schedule we have discussed with active participants over the last two months.

From an air quality perspective, the proposed amendment seeks simply to exempt the new facilities without identifying necessary future air pollution controls to maintain the air quality improvements that the current system is providing. This is contrary to the discussions held at the stakeholder level, contrary to what the State of Maryland is doing (despite testimony questioning

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The Honorable Debra J. Heffernan  
June 9, 2014  
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this), and contrary to the tentative agreement that the Division has managed to reach with active participants in the last two months.

We appreciate and support efforts to reduce unnecessary burdens on the regulated community and we believe that such outcomes are best achieved through an open and collaborative stakeholder process. Unfortunately, this amendment tries to upend the regulatory process, discourages participation in stakeholder discussions, degrades our collaborative approach, and will harm air quality. I hope you find our approach responsive to the stated intent of the proposed amendment and a preferred alternative to the proposed amendment.

Should you have any questions regarding this matter please do not hesitate to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Ali Mirzakhali', with a stylized flourish at the end.

Ali Mirzakhali, P.E.  
Director

January 23, 2013

Mr. Peter Romano  
President & COO  
Independent Oil Marketers Association of New England  
PO Box 1827  
North Falmouth, MA 02556

***Re: Review of ERG's Final Report for the MassDEP on Stage I and Stage II***

*Job 3656*

Dear Mr. Romano:

Tech Environmental, Inc. (Tech) is pleased to provide this letter summarizing our review of Eastern Research Group Inc.'s (ERG's) recent "Air Program Support for Stage I and Stage II Programs in Massachusetts, Final Report", dated December 12, 2012. This letter provides a technical analysis of potential changes to the Massachusetts Stage I and Stage II vapor recovery programs for the Massachusetts Department of Environmental Protection (MassDEP).<sup>1</sup> As you are aware, the MassDEP is considering the elimination of Stage II vapor recovery requirements and the addition of Stage I enhancements for fleet refueling facilities (i.e., proposed amendments to 310 CMR 7.24).

### **Executive Summary**

This letter report focuses on some key aspects of the Stage I and Stage II vapor recovery programs. **Our analysis demonstrates: (1) that continuing the Stage II program is not cost-effective; (2) that a review of the data supports an immediate end to Stage II programs in Massachusetts, i.e. today; and (3) that the proposed Stage I continuous monitoring and pressure management proposals should be eliminated due to lack of data regarding the effectiveness of these systems when operated without Stage II programs in place.**

The analysis conducted by ERG supports the immediate removal of Stage II controls. In addition to becoming less cost effective over time, in the near future (and likely occurring at select locations today) the incompatibility excess emissions from the competing ORVR and Stage II emissions controls will overwhelm any reductions from the continuation of Stage II programs, and it is imperative that Stage II controls be removed before this happens.

Our review of the proposed Stage I enhancements concludes that the installation of continuous monitoring and pressure management systems are unproven in Massachusetts's harsh winter climate and that these systems are not a cost effective method to control VOC emissions. In addition, these systems are untested when used without Stage II in place. Therefore, we recommend the elimination of the proposed Stage I enhancements from the MassDEP's proposed amendments to 310 CMR 7.24.

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<sup>1</sup> Summarized on the MassDEP website: <http://www.mass.gov/dep/air/community/stageii.htm#changes>



## **1.0 Review of Stage II and Related VOC and Benzene Emission Assumptions**

The MassDEP is considering when to allow the removal of Stage II systems in MA, given the diminishing emission benefits as on-board refueling vapor recovery (ORVR) systems become more prevalent. Each year, as ORVR systems become more common on vehicles being refueled, the emissions benefit of Stage II systems decreases and so the cost of reducing these emissions quickly increases on a dollar per ton of VOCs removed basis. At a point in the near future (and likely occurring at select locations today), the incompatibility excess emissions from the competing ORVR and Stage II emissions controls will overwhelm any emission reduction benefits from the continuation of Stage II programs.<sup>2</sup> It is essential that Stage II be removed before this time so that these excess emissions are not released into the atmosphere. Our review of the ERG report found there is strong evidence to support the immediate, full removal of Stage II equipment.

### **1.1 Cost of Continuing Stage II Controls**

ERG's report states that ORVR systems alone will result in the same emission reductions as Stage II systems alone by approximately July 2013, and presents the costs per ton of VOC reduced for continuing Stage II in 2013 and 2015 (ERG report, Table 3-8 and 3-9). The report estimates costs of \$19,889 - \$22,932 per ton of VOCs removed by Stage II in 2013, as compared to \$28,995 as calculated in Tech's September 28, 2012 report.<sup>3</sup> These estimates rapidly increase to costs of \$80,030 - \$116,466 per ton of VOCs removed by Stage II in 2015.

For comparison, MassDEP's 2011 guidance used to determine if an air pollution control technology is economically feasible assumes that a cost effective control technology would have a cost no higher than \$11,000 - 13,000 per ton of VOC removed in a non-attainment area.<sup>4</sup> Clearly, Stage II controls in Massachusetts are already well beyond the point of being cost-effective.

Stage II controls continue to become less cost-effective as ORVR penetration increases and predicted gasoline sales decrease. A recent article in the Wall Street Journal mentioned that the recovering US auto industry and new vehicle offerings, pickup-truck demand and a stable economy are helping to fuel increasing vehicle sales to above 15 million this year. New vehicle registrations, which are a key indicator of auto sales, are also expected to increase.<sup>5</sup> This increase in sales will mean more ORVR-equipped vehicles on the road and thus greater possibility of incompatibility excess emissions with Stage II controls. In addition, predicted VOC emissions from refueling are expected to decrease in the future due to a decrease in gasoline sales as the vehicle miles per gallon (MPG) increases and hybrid vehicles become more common.<sup>6,7</sup>

<sup>2</sup> IOMA Press Release, "House Resolution may lead to 240-ton reduction in Commonwealth's 2011 smog emissions", March 25, 2010.

<sup>3</sup> Tech Environmental Inc., "Review of ERG's Report for the MassDEP on Stage I and Stage II", September 28, 2012.

<sup>4</sup> MassDEP, "Best Available Control Technology Guidance", June 2011.

<sup>5</sup> Bennett, Jeff. "U.S. Auto Sales Seen Exceeding 15 Million for Full-Year 2013", January 2, 2013, The Wall Street Journal.

<sup>6</sup> "The Outlook for Energy: A View to 2040", ExxonMobil, 2012. Available online: [http://www.exxonmobil.com/Corporate/energy\\_outlook.aspx](http://www.exxonmobil.com/Corporate/energy_outlook.aspx)

<sup>7</sup> David M. Parker, Valero, Presentation at the PMAA Board of Directors Meeting, May 18, 2012.

## **1.2 Impact of VOC Controls on MA Emissions Inventory**

To provide insight into the extent of the magnitude of the proposed emission reductions from continuing Stage II controls, the estimates of VOC control can also be compared to the predictions of VOC emissions in the Commonwealth contained in the most recent Massachusetts Periodic Emissions Inventory (PEI).<sup>8</sup> Assuming that the VOCs controlled by Stage II in 2013 are 1.98 tons per day as predicted in ERG's report (Table 3-5), these emissions would only represent 0.6% of the area source emissions (which includes gasoline dispensing facilities) in the Commonwealth on a summer day.<sup>9</sup> When the predictions of the VOCs controlled by Stage II in 2013 are compared to the PEI's total emissions of VOCs in the Commonwealth, this number decreases to 0.3%. Clearly the magnitude of the emissions which could potentially be controlled is very low.

## **1.3 Benzene Emissions**

The ERG report also considers the statewide benzene emissions reductions from continuing Stage II controls in the Commonwealth. In 2013, ERG estimates that the incremental benefit of maintaining Stage II control would provide an additional emission reduction of 15.48 lbs/summer day in the entire Commonwealth. Using the same cost figures discussed above, on a dollar per ton removed basis for benzene, the estimated costs are \$4.25 Million - \$4.29 Million per ton of benzene removed by Stage II in 2013.

Since 1994, the MassDEP has been monitoring for benzene emissions. In 1997, they reported that a preliminary analysis of the ambient concentrations revealed a decline in certain toxic VOC. They attribute the substantial decrease in benzene and other air toxins to the introduction of reformulated gasoline in January 1995. A graph showing the decreasing trend in benzene emissions over time, as compared to federal and Massachusetts ambient air guidelines is attached, Figure 1. Please note that benzene air measurements are not only composed of emissions from mobile sources, but also include other fuel combustion, industrial processing operations and biogenic sources.

As is shown by the figure, the levels of benzene have been decreasing over time and are well below the MassDEP 24-hour threshold effects exposure limits (TEL) and the Agency for Toxic Substances and Disease Registry (ATSDR) Minimal Risk Level (MRL). The TEL is a concentration, based on non-cancer health effects, intended to protect the general population, including sensitive populations such as children, from adverse health effects over a lifetime of continuous exposure. The values are above the Massachusetts annual Ambient Air Limit (AAL), which is generally based on known or suspected carcinogenic health effects, a concentration associated with a one in a million excess lifetime cancer risk over a lifetime of continuous exposure.<sup>10</sup> The United States Environmental Protection Agency Inhalation Reference Concentration (RfC) is an upper and lower bound estimate of a continuous inhalation exposure of a chemical to the human population through inhalation (including sensitive subpopulations) that is likely to result in less than 1 in a million risk of developing cancer over a lifetime

<sup>8</sup> "Massachusetts 2005 Periodic Emissions Inventory of: Volatile Organic Compounds, Nitrogen Oxides, Carbon Monoxide, Sulfur Dioxide, Particulate Matter, Ammonia", Massachusetts Department of Environmental Protection, September 2008.

<sup>9</sup> Area sources are defined in "The Massachusetts 2002 Base Year Emissions Inventory of: Volatile Organic Compounds, Nitrogen Oxides, Carbon Monoxide, Sulfur Dioxide, Particulate Matter, Ammonia", Massachusetts Department of Environmental Protection, September 2007, Draft for Public Hearing. Gasoline stations and dry cleaning establishments are treated as area sources."

<sup>10</sup> MassDEP AALs and TELs: <http://www.mass.gov/dep/toxics/stypes/telaal.htm>



of exposure.<sup>11</sup> The ATSDR, a federal public health agency of the U.S. Department of Health and Human Services, has set a Minimal Risk Level (MRL) for chronic-duration inhalation exposure ( $\geq 1$  year).<sup>12</sup> The figure clearly shows that benzene air levels are trending down and will continue to do so with improvements in vehicle emissions standards and vehicle fuel efficiency standards.

In a presentation at the January 10, 2013 Stakeholder Meeting on Stage I & Stage II Program Changes, the MassDEP presented benzene emissions monitoring data, including emissions data from the monitoring station in Chicopee, MA. The benzene levels in Chicopee were higher than one might expect from a rural location and it is possible that some of these emissions are transported upwind from upstate New York, given the downwind proximity, the predominantly westerly winds, and the half-life of benzene. Upstate New York has never had Stage II controls and with Chicopee directly downwind, it is likely that the benzene concentration may be influenced by its western neighbor.

The MassDEP's emphasis on benzene emissions as a reason to maintain Stage II controls is suspect at best, given that the United States Environmental Protection Agency (EPA) has not mentioned any concerns regarding benzene from GDFs. The EPA's Guidance document<sup>13</sup> states that having a comparable measure of control is satisfied if phasing out a Stage II control program in a particular area is estimated to have a de minimis, incremental loss of area-wide emissions control. Under the EPA's definition, Massachusetts is allowed to immediately remove Stage II with EPA's support.

To consider the magnitude of the ERG's predicted estimate of 15.48 lbs benzene/summer day, compare this estimate to the estimated benzene from the on-road mobile source benzene in the PEI. The PEI on-road MOBILE6.2 VOC emissions are predicted to be 111.8 tons per summer day, or 0.44 tons of benzene per summer day.<sup>14</sup> The predicted savings of benzene by keeping Stage II controls (15.48 lb or 0.00774 tons/summer day) would thus represent only 1.8% of the mobile source benzene in the Commonwealth.

## **2.0 Review of Stage I Continuous Vapor Monitoring**

The ERG report reviewed various Stage I enhancements including: CARB Module I Stage I Enhanced Vapor Recovery (EVR) systems, continuous vapor leak monitoring systems (continuous monitoring), and pressure management systems (emissions processors), as well as the estimated VOC reductions from these systems. Tech reviewed the emissions savings related to the use of continuous monitoring systems, which use a sensor to monitor UST systems for vapor leaks.

### **2.1 Continuous Vapor Monitoring is Less Effective than Assumed**

Section 4.2.2 of the final ERG report, briefly addresses the reliability of these continuous monitoring systems in winter when they are exposed to snow and extremely cold temperatures, by stating that "ERG believes these systems should work reliably in Massachusetts..." Tech raised a concern in our September 28, 2012 comment letter that this "belief" seems overly optimistic given the equipment

<sup>11</sup> EPA Benzene RfC: <http://www.epa.gov/iris/subst/0276.htm>

<sup>12</sup> ATSDR Benzene ToxFAQs: <http://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=38&tid=14>

<sup>13</sup> "Guidance on Removing Stage II Gasoline Vapor Control Programs from State Implementation Plans and Assessing Comparable Measures", August 7, 2012, EPA-457/B-12-001.

<sup>14</sup> The estimated VOCs emissions in the PEI from on-road mobile sources were multiplied by the benzene fraction of VOC calculated by MOVES (0.0039 or 0.39%) to calculate total estimated benzene emissions.



problems and malfunctions that have occurred during the winter season in California. CARB released a memorandum entitled “Response to Winter Season ISD Pressure Alarms”<sup>15</sup> that states that during the “winter fuel season, the number of pressure related ISD alarms increases significantly”, such that no service or equipment testing is required prior to clearing the OP alarms from November 1 to March 1. The extent of this problem is wide-spread enough that CARB even offers a training session for GDF operators on how to handle alarms in the winter season.<sup>16</sup> Winter in California is far less cold than winter in New England. These concerns are being raised again here since it is our opinion that ERG and MassDEP did not adequately address the potential for problems with continuous monitoring in cold weather. Given that these systems are untested in the harsher New England environment, there is great concern regarding faulty alarms during a New England winter which could create a situation of alarm fatigue where alarms are ignored. In addition, any cost benefit analysis would need to consider that the equipment is out of service for at least four months of the year. Tech strongly believes that requiring a system that is untested in the Massachusetts climate is premature at this time.

## 2.2 Continuous Monitoring Emissions Reduction Assumptions

The ERG report’s review of continuous monitoring and pressure management systems relied heavily on assumptions regarding the estimated impact of system leaks. While these assumptions were necessary since the EPA has not provided guidance on how to estimate emissions reductions for either system, the extent of the assumptions used in the cost effectiveness calculations raises significant doubts on their reliability and accuracy. Several major issues with these assumptions are presented below, which cast doubt on the cost effectiveness calculations.

First, the testing failure rates for GDFs that have both Stage I and Stage II systems were used to estimate the potential emissions reduction benefits for continuous monitoring. Those testing data came from over-pressurized UST systems associated with the Stage II systems. The ERG report correctly acknowledged that without Stage II, it is possible that the leaks would be reduced; thereby lowering ERG’s assumed continuous monitoring emission reductions. This means that once Stage II systems are removed, the potential benefits from the installation of a continuous monitoring system are greatly reduced, making these systems less cost effective.

Table 4-7 of ERG’s final report shows the predicted emission reductions for continuous monitoring for vapor leaks. In this table, the breathing loss reduction is calculated based on several factors; we believe that four of these factors contribute to an overestimation of the level of control that continuous monitoring for vapor leaks will be able to achieve. Tech has updated ERG’s Table 4-7 (provided at the end of this report) to correct this overestimation. The corrections are as follows.

The first factor to update the breathing loss calculation is from the breathing loss reduction calculation, which is based on an out-of-date emission factor from AP-42 that is from a 1962 paper which cites emissions of 1 lb/1000 gallons.<sup>17</sup> In 1962, gasoline RVP values were lower and GDFs had lower gasoline throughput levels. To correct for this, the IOMA suggests that the emissions factor for

<sup>15</sup> CARB Special Advisory, Response to Winter Season ISD Pressure Alarms”, Number 405-B, October 10, 2011.

<sup>16</sup> Course #267.1: Changes in Response to In-Station Diagnostic Alarms:

<http://www.arb.ca.gov/training/courses.php?course=267.1>

<sup>17</sup> Burlin, Ralph M. and Fudurich, Albert P. “Air Pollution from Filling Underground Gas Storage Tanks”, December 1962, Air Pollution Control District, City of Los Angeles.



uncontrolled breathing losses be reduced to 0.76 lb/1,000 gallons to reflect reduced gasoline volatility during the summer months.

The second factor to update the breathing loss calculation is from the reduction due to the pressure decay failures which were attributed to be caused by Stage I components. ERG assumed that the fraction of failures related to pressure decay tests was 75% - 85%. This assumption was based on “anecdotal evidence from companies that perform GDF certification tests” rather than on a review of actual testing data which would have given a more accurate estimate. Industry experts from IOMA had previously conducted a detailed review of pressure decay testing at 234 stations in Connecticut and found only 53% attributable to Stage I components. In lieu of ERG’s unsupported estimate, this empirical value has been used instead.<sup>18</sup>

The third factor to update the breathing loss calculation is from the reduction taken based on the assumption that vapor leak monitoring systems will eliminate 50% of the leaks. As detailed in IOMA’s comment letter to the MassDEP, this factor is believed to be overstated and it would not be unreasonable to assume it were half that value, and so 25% was used.<sup>18</sup>

The fourth factor considered for the update of the breathing loss calculation is the percent of compliance failures due to pressure decay failures. ERG assumed 85% for each GDF category, which suggests it is an estimate rather than based on a recent analysis of certification data. IOMA reviewed data from Stage I/II compliance testing failures from 2011-2012 for 150 stations in Massachusetts.<sup>19</sup> Of these tests, 12.5% were found to be compliance failures due to pressure decay, which was conservatively doubled to 25% when updating the calculations in Table 4-7.<sup>18</sup>

Tech updated Table 4-7 based on the factors discussed above. As can be seen, the estimated benefit from continuous monitoring for vapor leaks has been reduced to 1.49 tons/summer day, as compared to the 2.69 tons/summer day calculated by ERG. This estimate with actual industry data is 45% lower than what ERG had calculated. The costs per ton of VOC reduced for continuous monitoring for vapor leaks (shown in ERG’s table 4-14) are estimated to be approximately twice as high. This makes the installation and operation of the continuous vapor monitoring systems even less cost effective than in ERG’s report. It is also noted that the tons of VOCs reduced by the installation of these systems are likely to be even lower assuming the anticipated decline in gasoline sales in the future, and the GDFs would be burdened with false alarms due to the ineffectiveness of an alarm system during the long Massachusetts winter.

### **3.0 Conclusion**

In 2011, EPA reviewed Stage II vapor recovery system decommissioning and estimated the national cost savings for facilities decommissioning Stage II vapor recovery systems to be over \$88 million annually. The review of Stage II was undertaken as part of the current administration’s initiative to review outdated rules and update them to ensure that they are still achieving the environmental benefits that they were intended to achieve. In allowing Stage II equipment to be removed, the EPA is acknowledging that Stage II is no longer “achieving the environmental benefits that they were intended to achieve”. Our analysis, like the analysis conducted by ERG, supports the immediate removal of

<sup>18</sup> Personal communications between Dana Buske and Steven Charron of IOMA, January 16 & 18, 2013.

<sup>19</sup> The NPN Station Count from 2006 listed 2,700 GDFs in Massachusetts, so the sample size was approximately 5.6% of the stations in the Commonwealth.

Stage II controls. In addition to becoming less cost effective over time, in the near future (and likely occurring at select locations today) the incompatibility excess emissions from the competing ORVR and Stage II emissions controls will outweigh any emission reduction benefits from the continuation of Stage II programs, and it is imperative that Stage II controls be removed before this happens.

The proposed Stage I enhancements, namely the installation of continuous monitoring and pressure management systems, are unproven in Massachusetts's harsh winter climate and are untested when used without Stage II in place. Given the unproven nature of the technology and excessive costs to control VOC emissions, they should not be required in Massachusetts and these controls should be shelved unless future work supports their usages. Therefore, we recommend the elimination of these proposed Stage I enhancements.

If you have any questions regarding this report, please let us know.

Sincerely,  
TECH ENVIRONMENTAL, INC.



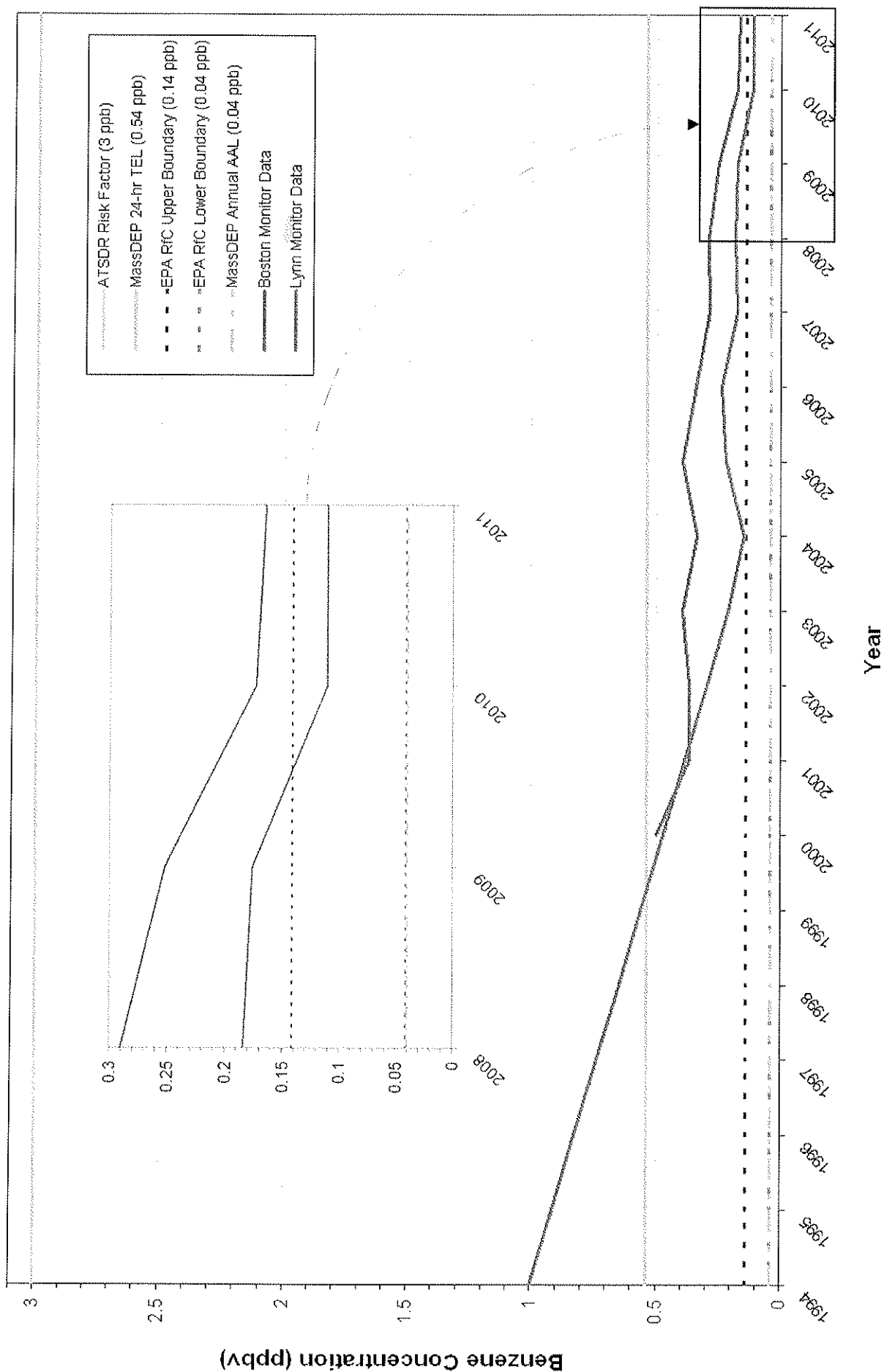
Dana C. Buske, Ph.D.  
Environmental Scientist



Marc C. Wallace, QEP  
Associate



Figure 1. Benzene Emissions Data & Guideline Concentrations



Updated Table 4-7. Emission Reductions for Continuous Monitoring for Vapor Leaks

| Throughput Category<br>(gal/yr) | # of<br>facilities | Total Annual<br>Throughput<br>(gal) | Tech's<br>Breathing Loss<br>Reduction<br>(lb/1,000 gal) | Filling<br>Losses<br>(tons/yr) | Tech's<br>Calc'd<br>Breathing<br>Losses<br>(tons/yr) | Tech's<br>Modified<br>Total<br>Benefit<br>(tons/yr) | Tech's<br>Modified<br>Total Benefit<br>(tons/summer<br>day) |
|---------------------------------|--------------------|-------------------------------------|---|--------------------------------|--|---|---|
| Less than 120,000               | 598                | 35,880,000                          | 0.09  | 6                              | 0.2  | 6   | 0.02  |
| 120,000 to 240,000              | 114                | 20,520,000                          | 0.10  | 4                              | 0.1  | 4   | 0.01  |
| 240,001 to 500,000              | 371                | 137,270,000                         | 0.12  | 25                             | 1  | 26  | 0.07  |
| 500,001 to 1,000,000            | 814                | 610,500,000                         | 0.12  | 109                            | 5  | 114   | 0.31  |
| 1,000,001 to 2,000,000          | 894                | 1,341,000,000                       | 0.12  | 239                            | 11   | 250   | 0.68  |
| Greater than 2,000,000          | 241                | 771,200,000                         | 0.13  | 138                            | 7  | 145   | 0.40  |
| <b>ALL</b>                      | <b>3032</b>        | <b>2,916,370,000</b>                |   | <b>521</b>                     | <b>24</b>  | <b>545</b>  | <b>1.49</b>   |



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ABOUT

Tech Environmental has provided air quality services for over two decades, delivering sampling, monitoring and modeling results with speed and precision. Since our founding in 1984, we have completed over 2,000 air quality and dispersion modeling projects. Our experts devise cost-effective solutions to air pollution control, air permitting, indoor air quality and mold concerns.

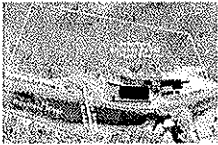
As regulations evolve for developing issues such as greenhouse gas emissions, Tech's focused knowledge provides much-needed clarity. When the environmental success of a business or project hinges on addressing issues of air quality, time-tested expertise offers a significant advantage.

- Air Monitoring
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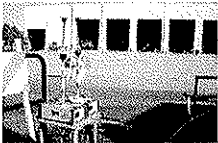
EXAMPLES



**Air Quality Advisory Services and Technical Support**  
MassDEP eDEP Source Registration System



**Air Permitting Support for Biomass Power Plant**  
Russell Biomass Power Project



**Air and Noise Monitoring for C&D Station**  
Champion City Recovery



**Fast-Track Mold Sampling & Remediation**  
Lincoln (MA) Public Schools



**Dispersion Modeling & Air Quality Analysis**  
P.A. Landers Gencor Industries Asphalt Plant

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## Specific Issues/Conflicts

### Section 36.4 Standards for facilities without Stage II Vapor Recovery Systems

CARB

Section 36.4.2 and 36.4.3 reference the procedure TP-201.3 “Determination of 2 Inch WC Static Pressure Performance of Vapor Recovery Systems of Dispensing Facilities” dated July 26, 2012. The referenced procedure requires the test results to be compared to either Table 1A or Table 1B to determine the “acceptability of the final system static pressure results” as stated in Section 7.3 of the testing procedure. Table 1A is for Phase II Balance Systems and Table 1B is for Phase II Assist Systems. If these proposed regulations are passed, stations will no longer have Stage II vapor recovery. Please clarify how the regulated community will determine the vapor leak rate as required in section 36.4.2 of the proposed regulation using TP-201.3 on a station without Stage II Vapor Recovery. It would also be best to keep in mind that GDFs with monthly throughputs of 100,000 gallons or more are already subject to requirements to use TP-201.3 to meet a leak-tightness specification that is identified in 40 CFR 63 Subpart CCCCCC, Table 1, and that Delaware’s identification of some different specification will likely lead to confusion.

Section 36.4.3 also identifies a need to keep static pressures at least 0.5 psia below the cracking pressure of the PV valve at least 95% of the time, as measured by a continuous monitoring system. The ability to meet this standard has not been adequately demonstrated in practice (even in California with EVR Stage II systems certified to meet similar pressure standards, where monitoring systems have been identifying that pressures exceed standards outside the ozone season when higher RVP gasoline is in use). CARB is still studying this issue, and originally planned on having a solution to propose this November but has since had to postpone those plans. For leak-tight GDFs equipped with Stage I only, API has shown that pressures increase during periods of inactivity (e.g., overnight) and therefore smaller-scale GDFs that are closed for longer periods of time may tend to have higher static pressures overnight. In any case, this standard will almost certainly require a pressure monitoring device, none of which have been evaluated by CARB (or other agencies) on GDFs not equipped with Stage II vapor recovery, and certainly none of which are included in DNREC’s cost estimates.

### Section 36.5 Monitoring Requirements and Corrective Action

Section 36.5.1 requires the regulated community to install “a continuous pressure monitoring (CPM) system as identified in Exhibit 1, Section II of CARB Executive Order VR-202-P dated December 10, 2013”. This system is specific to vacuum-assisted Stage II Vapor Recovery systems, and therefore includes features that are completely useless for non-Stage II systems, such as a vapor flow meter for each dispenser and vapor-to-liquid ratio monitoring for each fueling point. If DNREC means to propose a requirement for only a stripped-down modified version of the equipment identified in Exhibit 1, Section II (e.g., that only estimates leak rate), this needs to be explicitly stated. **Again, the equipment described in Exhibit 1, Section II is designed for stations with Stage II Vapor Recovery meeting California’s EVR requirements, which will not be the case if the proposed regulations are passed. It should be noted that this CA Executive Order is only valid through September 1, 2015 and is not**



**authorized on stations with throughputs less than 600,000 gallons per year (50,000 gallons per month).**

Section 36.5.3 indicates that the Continuous Pressure Monitoring System shall alarm when the vapor leak rate fails the requirement specified in 36.4.2 or pressure requirement in 36.4.3. Section 36.4.2 refers to a leak rate of two (2) times what is allowed by TP-201.3. It is believed that this determination is made through the software in the pressure monitoring system. Please clarify if the software is available to calculate the two (2) times the TP-201.3 leak rate. California's ISD certification procedures (TP-201.2I) also require that vendors quantify precision, biases, and false positives associated with monitoring compliance with California's standards and that the vendors adjust alarms accordingly; would DNREC be requiring this for DNREC's standards as well? Unlike in California, the trigger points in the monitoring systems would also need to be adjusted each time that the cracking pressure changes; please identify whether owners/operators would need to make these changes, or whether they would be required to hire contractors to do so. CARB also felt that it was important to require that the systems certified in California be installed/maintained by vendor-certified technicians, please identify whether DNREC would be requiring this as well. **As stated previously, these systems are only in use in California and there is concern that the software is set to California Standards, which would cause false alarms.**

Section 36.5.3.3.2 states that if the system has a second alarm within one week of the first alarm that the station shall develop and submit a resolution plan which may involve installing a pressure management system. **The concern is that no such system has been approved for use on Non-Stage II systems by a regulatory agency or other third-party testing authority, has not been tested in Delaware weather and there are concerns that the software in the system is not consistent with Delaware's proposed regulations. These issues could result in multiple alarms in one week and will likely require most if not all stations to install a Pressure Management System which could cost over \$50,000 on top of the Department estimate of \$5,000 to install the Continuous Pressure Monitoring System.** Regarding the ability of a pressure management system to reliably meet the pressure standard when higher volatility gasoline is in use, the California Air Resources Board issued two advisories regarding alarms during winter months. Please see the two attachments dated October 6, 2009 and October 10, 2011. The advisories are a result of questionable equipment reliability with respect to the pressure standard and the necessary need to provide relief to businesses. Lastly, **California requires specially formulated fuel which is different from the federally required Reformulated Gasoline that is sold in Delaware. The vapor pressure of the California summer fuel is lower than the fuel supplied in Delaware which is one more area of concern with the proposed continuous monitoring system. California experiences problems with false alarms in the winter months when the vapor pressure of the fuel is higher and the Delaware summer fuel has a higher vapor pressure than California's which brings the question of how the system will react with a higher vapor pressure summer fuel.** Again, this proposed system needs to be tested in the Delaware climate with the Delaware fuel on a site that does not have Stage II.





# Special Advisory

## ENHANCED VAPOR RECOVERY

### Response to Winter Season ISD Pressure Alarms

Number 405-B

December 27, 2011

#### INTRODUCTION

Enhanced Vapor Recovery (EVR) regulations require that gasoline dispensing facilities (GDF) with annual throughput greater than 600,000 gallons must install an In-Station Diagnostics (ISD) system to monitor vapor recovery system performance. ISD systems are effective year round in reducing gasoline vapor emissions because the system operator is quickly alerted of an equipment problem. Thus, ISD delivers important air quality and health benefits.

Under the current enforcement policy, a service call is required when an ISD alarm occurs. This advisory amends the current enforcement policy to benefit the station operator by reducing the costs associated with service calls to respond to winter season ISD pressure alarms.

Data collected by the Air Resources Board (ARB) staff indicate that during the winter fuel season, the number of pressure related ISD alarms increases significantly. ARB staff has determined that most of these alarms are not associated with an EVR equipment problem. The most likely cause of the increased number of alarms is the higher volatility of gasoline used in the winter season. Therefore, this advisory reduces the number of service calls in response to winter season pressure related alarms. ARB staff has begun a long-term study of these alarms and is committed to developing a permanent solution that will eliminate pressure alarms that are not related to malfunctioning equipment.

#### How to Respond to Over Pressure (OP) Alarms in the Winter

From November 1 to March 1, a service call or equipment testing is not required prior to clearing the ISD OP alarms that are listed in Table 1 of this advisory. This action is being instituted because field data show that in many cases no equipment failure can be identified during the response to winter season OP alarms.

The required response to OP alarms is dependent on the date and is detailed below.

| Date Range        | Required Response to OP Alarms  |
|-------------------|---|
| Nov. 1 to Mar. 1  | No service or equipment testing is required prior to clearing the OP alarms listed in Table 1.  |
| Mar. 2 to Oct. 31 | Requirements of the current enforcement policy, District permit conditions, or ARB approved Phase II EVR Executive Orders and Veeder-Root ISD or Incon Vapor Recovery Monitoring (VRM) Installation, Operation and Maintenance (IOM) manuals apply. |

**Local districts will not require any service calls or equipment testing in response to ISD over pressure alarms that occur November 1 through March 1.**

During this four month period, there is no requirement for a service call or equipment testing prior to clearing any of the ISD OP alarms that are listed in Table 1 of this advisory. Because some districts have incorporated permit conditions that only allow certified service providers to reset or clear ISD warning and failure alarms, the GDF operator may need to have alarms reset by an authorized service provider or seek training by an authorized service provider on the proper procedure to clear and reset OP warning alarms.

**Local districts will require service calls and equipment testing in response to all ISD over pressure alarms that occur from March 2 to October 31.**

All OP alarms that occur from March 2 to October 31 will require the GDF operator to call for service if the alarm is still active 48 hours after the first appearance of the alarm.

**Record Keeping Requirements**

In order to properly document a required response to an ISD OP alarm (March 2-October 31) and avoid penalties imposed by the district, service providers must conduct the testing specified in the current enforcement policy, District Permit to Operate, or ARB approved Phase II EVR Executive Orders and Veeder-Root ISD or Incon VRM IOM manuals. As required by district regulations and permit conditions, both the service provider and GDF operator should: 1) maintain a written record of all the ISD alarms; and 2) if applicable, keep records of test results, equipment inspections, and equipment maintenance and repairs.

**This Advisory will remain in effect until formally rescinded by the Air Resources Board.**

**Questions**

If you have any questions regarding this advisory, please contact Ms. Melinda Weaver by phone at (916) 322-8918 or by email at [mweaver@arb.ca.gov](mailto:mweaver@arb.ca.gov).

California Air Resources Board  
Monitoring and Laboratory Division  
P.O. Box 2815  
Sacramento, CA 95812



Table 1: ISD Over Pressure Alarms Eligible for Relief from Service Call Requirements from November 1 to March 1

| Phase II<br>EVR System<br>Description  | Vapor<br>Processor<br>Description                        | ISD System<br>Description               | Description of Eligible ISD Over Pressure<br>Message Displayed via ISD Console or<br>Manual Print Out | Message Displayed via Electronic Access |
|--|--|---|---|---|
| Healy<br>(Vacuum<br>Assist)            | Healy Clean<br>Air Separator<br>(CAS)                    | INCON<br>Franklin<br>Fueling<br>Systems | Weekly Ullage Pressure W  | Weekly Ullage Pressure Warning          |
|  |  |   | Weekly Ullage Pressure F  | Weekly Ullage Pressure Failure          |
|  |  |   | Monthly Ullage Pressure   | Monthly Ullage Pressure Warning         |
|  |  |   | Monthly Ullage Pressure   | Monthly Ullage Pressure Failure         |
| VST<br>(Balance)                       | VST ECS<br>(membrane)                                    | Veeder-Root                             | ISD GROSS PRESSURE WARN   | CONTAINMENT GROSS OVER PRESSURE         |
|  |  |   | ISD GROSS PRESSURE FAIL   | CONTAINMENT GROSS OVER PRESSURE         |
|  |  |   | ISD DEGRD PRESSURE WARN   | CONTAINMENT PRESSURE DEGRADATION        |
|  |  |   | ISD DEGRD PRESSURE FAIL   | CONTAINMENT PRESSURE DEGRADATION        |
|  | Veeder-Root<br>Vapor<br>Polisher<br>(carbon<br>canister) | Veeder-Root                             | ISD VP PRESSURE WARN  | VAPOR PROCESSOR OVER PRESSURE           |
|  |  |   | ISD VP PRESSURE FAIL  | VAPOR PROCESSOR OVER PRESSURE           |
|  |  |   | ISD GROSS PRESSURE WARN   | CONTAINMENT GROSS OVER PRESSURE         |
|  |  |   | ISD GROSS PRESSURE FAIL   | CONTAINMENT GROSS OVER PRESSURE         |
|  | HIRT VCS<br>100<br>(thermal<br>oxidizer)                 | Veeder-Root                             | ISD DEGRD PRESSURE WARN   | CONTAINMENT PRESSURE DEGRADATION        |
|  |  |   | ISD DEGRD PRESSURE FAIL   | CONTAINMENT PRESSURE DEGRADATION        |
|  |  |   | ISD VP PRESSURE WARN  | VAPOR PROCESSOR OVER PRESSURE           |
|  |  |   | ISD VP PRESSURE FAIL  | VAPOR PROCESSOR OVER PRESSURE           |
|  | Healy Clean<br>Air Separator<br>(CAS)                    | Veeder-Root                             | ISD GROSS PRESSURE WARN   | CONTAINMENT GROSS OVER PRESSURE         |
|  |  |   | ISD GROSS PRESSURE FAIL   | CONTAINMENT GROSS OVER PRESSURE         |
|  |  |   | ISD DEGRD PRESSURE WARN   | CONTAINMENT PRESSURE DEGRADATION        |
|  |  |   | ISD DEGRD PRESSURE FAIL   | CONTAINMENT PRESSURE DEGRADATION        |
| EMCO<br>Wheaton<br>Retail<br>(Balance) | HIRT VCS<br>100<br>(thermal<br>oxidizer)                 | INCON<br>Franklin<br>Fueling<br>Systems | ISD GROSS PRESSURE WARN   | CONTAINMENT GROSS OVER PRESSURE         |
|  |  |   | ISD GROSS PRESSURE FAIL   | CONTAINMENT GROSS OVER PRESSURE         |
|  |  |   | ISD DEGRD PRESSURE WARN   | CONTAINMENT PRESSURE DEGRADATION        |
|  |  |   | ISD DEGRD PRESSURE FAIL   | CONTAINMENT PRESSURE DEGRADATION        |
| EMCO<br>Wheaton<br>Retail<br>(Balance) | HIRT VCS<br>100<br>(thermal<br>oxidizer)                 | INCON<br>Franklin<br>Fueling<br>Systems | ISD GROSS PRESSURE WARN   | CONTAINMENT GROSS OVER PRESSURE         |
|  |  |   | ISD GROSS PRESSURE FAIL   | CONTAINMENT GROSS OVER PRESSURE         |
|  |  |   | ISD DEGRD PRESSURE WARN   | CONTAINMENT PRESSURE DEGRADATION        |
|  |  |   | ISD DEGRD PRESSURE FAIL   | CONTAINMENT PRESSURE DEGRADATION        |
| EMCO<br>Wheaton<br>Retail<br>(Balance) | HIRT VCS<br>100<br>(thermal<br>oxidizer)                 | INCON<br>Franklin<br>Fueling<br>Systems | Weekly Ullage Pressure W  | Weekly Ullage Pressure Warning          |
|  |  |   | Weekly Ullage Pressure F  | Weekly Ullage Pressure Failure          |
|  |  |   | Monthly Ullage Pressure   | Monthly Ullage Pressure Warning         |
|  |  |   | Monthly Ullage Pressure   | Monthly Ullage Pressure Failure         |

NOTE: The INCON ISD "Weekly Ullage Pressure Leak Test Warning" and the INCON ISD "Weekly Ullage Pressure Leak Test Failure" are not listed in Table 1. These alarms require a response by a certified contractor and should not be reset by the GDF operator.

# 1124 Control of Volatile Organic Compound Emissions

## 1.0 General Provisions

01/11/1993

1.1 This regulation, "Control of Volatile Organic Compound Emissions", replaces and supersedes Regulation No. 24, "Control of Volatile Organic Compound Emissions" dated July 3, 1990.

1.2 This regulation is applicable to the sources of Volatile Organic Compounds (VOCs) as set-forth herein, except:

1.2.1 Sources, other than solvent metal-cleaning sources, whose emissions of Volatile Organic Compounds (VOCs) are not more than fifteen (15) pounds per day, unless other limits are specified herein, provided the emission rates are determined and certified in a manner acceptable to the Department.

## 2.0 Definitions

"Source" means any building, structure, equipment (excluding mobile equipment temporarily in place), or installation that directly or indirectly releases or discharges, or has the potential to release or discharge, VOCs into the atmosphere.

## Questions

- 1) Does a Gasoline Dispensing facility release or discharge more than 15 pounds per day of Volatile Organic Compounds?
  - No release or discharge rates anywhere near 15 pounds per day have ever been presented or discussed for Gasoline Dispensing Facilities
  - Pressure management calculations supplied by DNREC suggest a rate of 1.08 lbs/day
- 2) Are there other limits specified herein?
  - No, there are no limits for VOC emissions specified in section 36 to apply to Gasoline Dispensing facilities.

## Conclusion

This regulatory revision will not apply to any Gasoline Dispensing Facility in the State of Delaware. This shows the following:

- Another example showing that this regulation is not well put together
- Another example of how we are regulating – to quote a DNREC representative in the review committee – "gnat farts"

## **Emission Calculations and Cost/Benefit Analysis of the Regulation Revisions to Vapor Emission Control Requirements at Gas Stations in Delaware**

For over 20 years, gasoline stations throughout Delaware have installed and operated vapor recovery equipment to capture gasoline vapors from a vehicle's fuel tank when refueling. This technology, known as Stage II vapor recovery, has significantly reduced volatile organic compound (VOC) emissions. VOCs contribute to summertime smog and also contain certain air toxics.

### **Widespread Use of Onboard Refueling Vapor Recovery (ORVR) Technology**

Beginning in 1998, new vehicles were equipped with ORVR canisters. For these vehicles, the vapors displaced during refueling are controlled through the vehicle's canister, not through the Stage II system. On May 16, 2012, the U.S. Environmental Protection Agency (EPA) issued a final rule (Federal Register Vol. 77, No. 95, page 28772) determining that ORVR technology was in widespread use, and as such, was largely making Stage II obsolete. The rule provided the ability for the discontinued use of Stage II.

In the rule, EPA compared the Stage II control efficiency to the ORVR control efficiency and determined widespread use of ORVR would take place when the two control efficiencies were equal. By this method EPA determined widespread use would take place nationally in mid-2013.

EPA's analysis in this comparison was based on a Stage II control efficiency of 86% for an annual inspection program, and 90% of gasoline sold being dispensed at gas stations that are equipped with Stage II systems. Therefore, the overall control efficiency of Stage II equates to approximately 77%. Table 2 of EPA's widespread use rule indicates the efficiencies of both Stage II and ORVR occur between 2012 and 2013.

Since Stage II systems in Delaware are required for any gas station that exceeds a monthly throughput of 10,000 gallons, approximately 98.5% of gasoline sold in Delaware is dispensed at a Stage II equipped station. The greater use of Stage II controls in Delaware as compared to the national average results in an in-use emission reduction efficiency of approximately 85%. Referring back to Table 2 of EPA's widespread use rule, Delaware's widespread use date would be at the end of 2015. However, a survey conducted during the development of the proposed regulatory revision indicated a majority of gas stations needed maintenance in order to pass the annual tank tightness test. Therefore, a reduction of the Stage II in-use emission reduction efficiency to 80% is more realistic, which would change the date of widespread use in Delaware to early 2014.

The Delaware Division of Air Quality (DAQ) has evaluated the shrinking benefit of Stage II as older vehicles are replaced with newer ORVR-equipped vehicles and determined that alternative requirements at gas stations would be more cost effective than retaining the requirement to install, operate and maintain Stage 2 systems. Therefore, DAQ has embarked on an effort to revise the vapor recovery regulations.



### **Current Configuration at Gas Stations**

When Stage II vapor recovery was introduced, emissions during refueling and emissions from gasoline storage tanks were greatly reduced. As gasoline vapors from a vehicle's gas tank were returned to the gasoline storage tank to replace the volume of liquid gasoline extracted from the storage tank during dispensing, the vapor-liquid equilibrium was maintained in the headspace of the storage tank. Once ORVR technology was introduced into new vehicles beginning with model year 1998, the return of gasoline vapors to the storage tank was altered, which results in increased emissions from the storage tanks. The change at gas stations brought about by the introduction of ORVR technology is as follows:

- (1) Gasoline vapors from a vehicle's fuel tank are venting to the vehicle's ORVR canister and not being returned to the storage tank,
- (2) Without vapors returning to the storage tank, fresh air replaces the volume of gasoline dispensed from the storage tank,
- (3) Fresh air promotes vapor growth in the headspace of the storage tank,
- (4) Vapor growth increases tank pressure, and
- (5) Tank pressure above atmospheric pressure results in emissions from tanks that are not vapor tight, and may also result in venting through the pressure relief valve.

In Delaware, 95% of Stage II systems are vacuum-assisted, which means there is a small pump that creates a vacuum at the nozzle to draw vapors from the vehicle's gas tank back to the storage tank. In the case of refueling ORVR-equipped vehicle, since the gasoline vapors preferentially pass through the on-board canister, the vacuum pump places fresh air, not gasoline vapors, into the storage tank. This one-to-one volume exchange of fresh air to replace the liquid gasoline withdrawn from the tank means the pressure of the headspace remains at atmospheric pressure. As stated above, vapor growth occurs when fresh air is placed into the headspace of the storage tank and any vapor growth would cause positive pressure within the tanks.

If the storage tank is vapor tight and the Stage II system does not push fresh air into the storage tank, then a vacuum would be created up to the negative cracking pressure of the pressure/vacuum (P/V) valve, also known as a pressure relief valve. While fresh air would eventually be drawn into the storage tank through the P/V valve since unlimited vacuum can damage the tank, the amount of vacuum created would provide some cushion for pressure increases due to vapor growth and the potential for emissions would be reduced.

The incompatibility of vacuum-assisted Stage II systems when refueling ORVR-equipped vehicle gives rise to a quantified "incompatibility excess emission (IEE)" that offsets some of the benefit gained by the use of Stage II vapor recovery for older vehicles. Over time the IEE increases as a result of a greater number of ORVR-equipped vehicles entering the overall vehicle fleet, while the benefit of Stage II decreases as fewer older vehicles remain. There comes a point in time when IEE is greater than the incremental benefit of Stage 2. The Division of Air Quality has estimated the break-even point to determine when Stage II systems should be made compatible with ORVR or removed from service.

### Break-even Point Calculation

DAQ estimated the IEE over time based on the following inputs:

- 1) Gasoline throughput in Delaware obtained from the Federal Highway Administration as published in Tables MF-21 and MF-33GA within the 2009 motor fuel use report,
- 2) Housing projection data from the Delaware Population Consortium for developing future year gasoline throughput,
- 3) EPA future year growth of ORVR-equipped vehicles as a percentage of the national gasoline vehicle fleet,
- 4) IEE emission factors developed from California Air Resources Board (CARB) testing and adjusted by the American Petroleum Institute to account for a 100% ORVR fleet and lower Reid Vapor Pressure gasoline,
- 5) Delaware-specific percentages of Gilbarco and Wayne-Dresser vacuum assisted Stage II system in use in Delaware for developing a weighted average IEE factor, and
- 6) Incremental benefit of Stage 2 in future years based on the use of EPA's MOVES model, based on an in-use control efficiency of 85%.

Through this analysis, the breakeven point is between 2018 and 2019, as shown in Table 1.

**TABLE 1 – Delaware Break-even Point**

| Year | IEE<br>tons/day | Additional<br>Emissions w/o<br>Stage II (tpd) | UST Control<br>Benefit Needed<br>to Break Even |
|------|-----------------|---|--|
| 2008 |                 | 1.402   |  |
| 2009 | 0.167           |   |  |
| 2010 | 0.183           |   |  |
| 2011 | 0.199           |   |  |
| 2012 | 0.213           |   |  |
| 2013 | 0.226           | 0.803   | 0.577  |
| 2014 | 0.239           | 0.684   | 0.445  |
| 2015 | 0.249           | 0.565   | 0.316  |
| 2016 | 0.260           | 0.446   | 0.186  |
| 2017 | 0.269           | 0.327   | 0.058  |
| 2018 | 0.277           | 0.296   | 0.020  |
| 2019 | 0.284           | 0.266   |  |
| 2020 |                 | 0.235   |  |

### Cost/Benefit Analysis of New Requirements

Based on the published AP-42 tank breathing loss emission factor of 1lb of VOC/1000 gallons of gasoline dispensed, the requirement to maintain a vapor tight system statewide demonstrated through the use

of a continuous pressure monitor (CPM) would address the high rate of system deterioration (up to 70%) between annual pressure decay tests, and could reduce 225 tons of VOC emissions or more per year. Based on vendor information the cost of the CPM is approximately \$5,000 and includes a pressure sensor, a console, leak detection software, and an automatic tank gauge. Note that the need for a console and an automatic tank gauge is independent of the CPM requirement (i.e., they are needed with or without a CPM).

The use of a CPM system eliminates the need for the annual pressure decay test. Based on information provided by the Tanks Management Section of DNREC, the average cost of an annual pressure decay test is \$1,000. Given this, the requirement to install and operate a CPM versus the requirement to conduct an annual pressure decay test results in a payback in about five years. Additional benefits to the stations will be realized because the station will no longer be required to shut down dispensing during the pressure decay test, and there will be savings in retained product.

With a vapor tight tank system, emissions may occur as a result of venting due to high pressure, and may violate the requirement to maintain system pressure below 0.5" water column (WC) below the positive cracking pressure of the P/V valve for 95% of the time, on a weekly basis. With venting taking place at the standard, which equates to 1.2 hours of venting per day, 1.08 lbs/day of emissions result based on the following conditions:

- 1) 10,000 gallon tanks are half full of product,
- 2) 3 tanks as part of a manifolded tank system,
- 3) Tanks are vapor tight,
- 4) Pressure increase is at a rate of 1" WC/hour, and
- 5) Headspace is at 46% saturation at the start of venting.

At 1.08 lbs/day, a gas station venting for 1.2 hours/day equals 0.2 tons/year. At a capital cost of \$12,000 for pressure management controls (carbon absorber) with a 20 year life and an assumed interest rate of 7%, the annualized cost is \$1,128/year. Therefore the cost effectiveness is  $1,128/0.2 = \$5,460/\text{ton}$ . If the time of venting doubles per day, or the rate of pressure increase doubles to 2"WC/hour, then the cost will be cut in half per ton of emissions reduced. The cost of pressure management does not include retained product.

Prepared 8/11/14



Comments Regarding Proposed Regulations  
1124 Control of Volatile Organic Compound Emissions

**Background**

The Stage II vapor recovery system is designed to capture gasoline vapors that would otherwise escape into the atmosphere as vehicles are refueled. In 2012 recognizing that the Stage II systems are no longer necessary because the vast majority of vehicles on the road have onboard canister systems, EPA gave authority to Delaware and other states to remove Stage II Vapor Recovery.

Other Northeast states (and states around the country) are moving forward to remove this burden from businesses, none of which have taken the extreme direction of Delaware. **See the enclosed chart for the most recent status.**

In October 2013 DNREC convened a stakeholder group and began a process of deliberation. Unfortunately the productiveness of the meetings broke down when early on it became clear that DNREC was committed to not focusing on the removal of Stage II and the decommissioning process but rather on implementing new regulations and costly mandates. **This became clear when three meetings centered on presentations from equipment manufacturers and distributors of equipment either not readily available in the marketplace, in prototype development, under patent review, or mandated nowhere else in the country other than California. All of which are proposed in the regulations, regardless of the continued objections from the private sector and regardless of marketplace availability, effectiveness, or cost. See 36.4.4; 36.4.5; 36.5**

In summary, the Department's proposed regulation requires the following:

1. That the owners/operators of GDFs not equipped with Stage II vapor recovery "shall design, install, operate, and maintain a continuous pressure monitoring (CPM) system as identified in Exhibit 1, Section II of CARB Executive Order VR-202-P, dated December 10, 2013"—i.e., an "In-Station Diagnostics" (ISD) system that is only required in ozone nonattainment areas in California on GDFs equipped with a specific make and model of vacuum--assisted Stage II Enhanced Vapor Recovery (EVR) system. That system includes several components specific to Stage II that are completely useless for systems not equipped with Stage II (such as vapor flow meters for each dispenser, the capability to monitor and record vapor-to-liquid ratio at each dispenser, and the capability to alarm and shut down dispensing if the ratios are not within specified limits), and CARB has not validated the accuracy of the leak detection algorithms applied to systems that do not have the specified Stage II EVR system. Delaware would be the only state in the country to require continuous pressure monitoring on GDFs not equipped with Stage II vapor recovery; i.e, not even California requires this.
2. That the owners/operators of GDFs not equipped with Stage II vapor recovery maintain tank system pressure below 0.5 inches water column below the positive cracking pressure of the P/V valve at least 95% of the time, on a weekly basis. This is a standard that not even current Stage II systems in Delaware are required to meet, and in fact, even properly

functioning California's Stage II EVR systems (which were designed to meet standards for pressure) have been having problems meeting similar types of standards in the wintertime (for reasons that CARB is still investigating), which is why CARB has issued Compliance Advisory 405-B (attached) to excuse them from addressing the associated pressure monitoring system alarms. While Stage I systems at some GDFs will often be capable of controlling pressure to those levels, they are not designed to be able to do so all the time, and based on experiences in California we believe it is very unlikely that they would be able to do so. This means that DNREC is effectively requiring some type of pressure management system at all of the GDFs that want to remove their Stage II systems, in addition to the monitoring system identified above. In addition, given the experiences in California and the fact that there have been no certifications of such systems applied to GDFs without Stage II, we are not aware of any commercially available pressure management systems that have been shown to reliably guarantee compliance with that pressure standard. On top of that, we believe that if continuous pressure monitoring equipment were to actually be installed, in several cases it will show that the conditions that trigger the need for pressure management systems may occur very infrequently and/or only outside the ozone season, making the investment in such systems extremely cost-ineffective.

3. That GDF owners/operators shoulder equipment and compliance costs associated with the abovementioned requirements that will be far above the DNREC assertion of \$5,000. To the contrary, in California, a complete ISD and pressure management system typically costs around \$50,000 (some reports upwards of \$60,000). DNREC continues to assert a cost savings, but we believe that these savings estimates are based on unrealistic worst-case assumptions about leak rates and associated quantities of vapor emitted, and that the savings have never actually been directly observed.

There is great concern over the published proposed regulations. As proposed, they raise many questions regarding the environmental impact, economic feasibility for compliance, and effectiveness of the mandated technology. We urge DNREC to withdraw and revise the regulations.

### **Better Direction**

1. Remove the requirements for Stage II Vapor Recovery for all new or modified gasoline dispensing facilities immediately, without requiring additional technology, as has been done in so many other states.
2. Provide for a 12-month testing site for a CPM system under DE climate conditions, with DE fuel standards and on a site that does not have Stage II.
3. This is the better direction for business and the environment. This direction will encourage tank upgrades and at the same time allow DNREC to evaluate the

effectiveness of the new technology and collect accurate data, before imposing this costly mandate on DE business owners.

Enclosed:

1. Chart of state activity – as known today.
2. CA Enforcement Directive
3. Specific Issues/Conflict document



# MID-ATLANTIC PETROLEUM DISTRIBUTORS' ASSOCIATION

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**A4 (15 pgs)**

August 28, 2014

DNREC  
Proposed Regulations  
1124 Control of Volatile Organic Compound Emissions  
Stage II Vapor Recovery

Comments Submitted By  
Ellen Valentino  
On Behalf Of The Mid-Atlantic Petroleum Distributors'  
Association



Comments Regarding Proposed Regulations  
1124 Control of Volatile Organic Compound Emissions

**Background**

The Stage II vapor recovery system is designed to capture gasoline vapors that would otherwise escape into the atmosphere as vehicles are refueled. In 2012 recognizing that the Stage II systems are no longer necessary because the vast majority of vehicles on the road have onboard canister systems, EPA gave authority to Delaware and other states to remove Stage II Vapor Recovery.

Other Northeast states (and states around the country) are moving forward to remove this burden from businesses, none of which have taken the extreme direction of Delaware. **See the enclosed chart for the most recent status.**

In August 2013 DNREC convened a stakeholder group and began a process of deliberation. Unfortunately the productiveness of the meetings broke down when early on it became clear that DNREC was committed to not focusing on the removal of Stage II and the decommissioning process but rather on implementing new regulations and costly mandates. **This became clear when three meetings centered on presentations from equipment manufacturers and distributors of equipment either not readily available in the marketplace, in prototype development, under patent review, or mandated nowhere else in the country other than California. All of which are proposed in the regulations, regardless of the continued objections from the private sector and regardless of marketplace availability, effectiveness, or cost. See 36.4.4; 36.4.5; 36.5**

In summary, the Department's proposed regulation requires the following:

1. That the owners/operators of GDFs not equipped with Stage II vapor recovery "shall design, install, operate, and maintain a continuous pressure monitoring (CPM) system as identified in Exhibit 1, Section II of CARB Executive Order VR-202-P, dated December 10, 2013"—i.e., an "In-Station Diagnostics" (ISD) system that is only required in ozone nonattainment areas in California on GDFs equipped with a specific make and model of vacuum--assisted Stage II Enhanced Vapor Recovery (EVR) system. That system includes several components specific to Stage II that are completely useless for systems not equipped with Stage II (such as vapor flow meters for each dispenser, the capability to monitor and record vapor-to-liquid ratio at each dispenser, and the capability to alarm and shut down dispensing if the ratios are not within specified limits), and CARB has not validated the accuracy of the leak detection algorithms applied to systems that do not have the specified Stage II EVR system. Delaware would be the only state in the country to require continuous pressure monitoring on GDFs not equipped with Stage II vapor recovery; i.e, not even California requires this.
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effectiveness of the new technology and collect accurate data, before imposing this costly mandate on DE business owners.

Enclosed:

1. Chart of state activity -- as known today.
2. CA Enforcement Directive
3. Specific Issues/Conflict document

## Specific Issues/Conflicts

### Section 36.4 Standards for facilities without Stage II Vapor Recovery Systems

Section 36.4.2 and 36.4.3 reference the procedure TP-201.3 “Determination of 2 Inch WC Static Pressure Performance of Vapor Recovery Systems of Dispensing Facilities” dated July 26, 2012. The referenced procedure requires the test results to be compared to either Table 1A or Table 1B to determine the “acceptability of the final system static pressure results” as stated in Section 7.3 of the testing procedure. Table 1A is for Phase II Balance Systems and Table 1B is for Phase II Assist Systems. If these proposed regulations are passed, stations will no longer have Stage II vapor recovery. Please clarify how the regulated community will determine the vapor leak rate as required in section 36.4.2 of the proposed regulation using TP-201.3 on a station without Stage II Vapor Recovery. It would also be best to keep in mind that GDFs with monthly throughputs of 100,000 gallons or more are already subject to requirements to use TP-201.3 to meet a leak-tightness specification that is identified in 40 CFR 63 Subpart CCCCCC, Table 1, and that Delaware’s identification of some different specification will likely lead to confusion.

Section 36.4.3 also identifies a need to keep static pressures at least 0.5 psia below the cracking pressure of the PV valve at least 95% of the time, as measured by a continuous monitoring system. The ability to meet this standard has not been adequately demonstrated in practice (even in California with EVR Stage II systems certified to meet similar pressure standards, where monitoring systems have been identifying that pressures exceed standards outside the ozone season when higher RVP gasoline is in use). CARB is still studying this issue, and originally planned on having a solution to propose this November but has since had to postpone those plans. For leak-tight GDFs equipped with Stage I only, API has shown that pressures increase during periods of inactivity (e.g., overnight) and therefore smaller-scale GDFs that are closed for longer periods of time may tend to have higher static pressures overnight. In any case, this standard will almost certainly require a pressure monitoring device, none of which have been evaluated by CARB (or other agencies) on GDFs not equipped with Stage II vapor recovery, and certainly none of which are included in DNREC’s cost estimates.

### Section 36.5 Monitoring Requirements and Corrective Action

Section 36.5.1 requires the regulated community to install “a continuous pressure monitoring (CPM) system as identified in Exhibit 1, Section II of CARB Executive Order VR-202-P dated December 10, 2013”. This system is specific to vacuum-assisted Stage II Vapor Recovery systems, and therefore includes features that are completely useless for non-Stage II systems, such as a vapor flow meter for each dispenser and vapor-to-liquid ratio monitoring for each fueling point. If DNREC means to propose a requirement for only a stripped-down modified version of the equipment identified in Exhibit 1, Section II (e.g., that only estimates leak rate), this needs to be explicitly stated. **Again, the equipment described in Exhibit 1, Section II is designed for stations with Stage II Vapor Recovery meeting California’s EVR requirements, which will not be the case if the proposed regulations are passed. It should be noted that this CA Executive Order is only valid through September 1, 2015 and is not authorized on stations with throughputs less than 600,000 gallons per year (50,000 gallons per month).**

Section 36.5.3 indicates that the Continuous Pressure Monitoring System shall alarm when the vapor leak rate fails the requirement specified in 36.4.2 or pressure requirement in 36.4.3. Section 36.4.2 refers to a leak rate of two (2) times what is allowed by TP-201.3. It is believed that this determination is made through the software in the pressure monitoring system. Please clarify if the software is available to calculate the two (2) times the TP-201.3 leak rate. California's ISD certification procedures (TP-201.2I) also require that vendors quantify precision, biases, and false positives associated with monitoring compliance with California's standards and that the vendors adjust alarms accordingly; would DNREC be requiring this for DNREC's standards as well? Unlike in California, the trigger points in the monitoring systems would also need to be adjusted each time that the cracking pressure changes; please identify whether owners/operators would need to make these changes, or whether they would be required to hire contractors to do so. CARB also felt that it was important to require that the systems certified in California be installed/maintained by vendor-certified technicians, please identify whether DNREC would be requiring this as well. **As stated previously, these systems are only in use in California and there is concern that the software is set to California Standards, which would cause false alarms.**

Section 36.5.3.3.2 states that if the system has a second alarm within one week of the first alarm that the station shall develop and submit a resolution plan which may involve installing a pressure management system. **The concern is that no such system has been approved for use on Non-Stage II systems by a regulatory agency or other third-party testing authority, has not been tested in Delaware weather and there are concerns that the software in the system is not consistent with Delaware's proposed regulations. These issues could result in multiple alarms in one week and will likely require most if not all stations to install a Pressure Management System which could cost over \$50,000 on top of the Department estimate of \$5,000 to install the Continuous Pressure Monitoring System.** Regarding the ability of a pressure management system to reliably meet the pressure standard when higher volatility gasoline is in use, the California Air Resources Board issued two advisories regarding alarms during winter months. Please see the two attachments dated October 6, 2009 and October 10, 2011. The advisories are a result of questionable equipment reliability with respect to the pressure standard and the necessary need to provide relief to businesses. Lastly, **California requires specially formulated fuel which is different from the federally required Reformulated Gasoline that is sold in Delaware. The vapor pressure of the California summer fuel is lower than the fuel supplied in Delaware which is one more area of concern with the proposed continuous monitoring system. California experiences problems with false alarms in the winter months when the vapor pressure of the fuel is higher and the Delaware summer fuel has a higher vapor pressure than California's which brings the question of how the system will react with a higher vapor pressure summer fuel.** Again, this proposed system needs to be tested in the Delaware climate with the Delaware fuel on a site that does not have Stage II.



# Special Advisory

## ENHANCED VAPOR RECOVERY

### Response to Winter Season ISD Pressure Alarms

Number 405-B

December 27, 2011

#### INTRODUCTION

Enhanced Vapor Recovery (EVR) regulations require that gasoline dispensing facilities (GDF) with annual throughput greater than 600,000 gallons must install an In-Station Diagnostics (ISD) system to monitor vapor recovery system performance. ISD systems are effective year round in reducing gasoline vapor emissions because the system operator is quickly alerted of an equipment problem. Thus, ISD delivers important air quality and health benefits.

Under the current enforcement policy, a service call is required when an ISD alarm occurs. This advisory amends the current enforcement policy to benefit the station operator by reducing the costs associated with service calls to respond to winter season ISD pressure alarms.

Data collected by the Air Resources Board (ARB) staff indicate that during the winter fuel season, the number of pressure related ISD alarms increases significantly. ARB staff has determined that most of these alarms are not associated with an EVR equipment problem. The most likely cause of the increased number of alarms is the higher volatility of gasoline used in the winter season. Therefore, this advisory reduces the number of service calls in response to winter season pressure related alarms. ARB staff has begun a long-term study of these alarms and is committed to developing a permanent solution that will eliminate pressure alarms that are not related to malfunctioning equipment.

#### How to Respond to Over Pressure (OP) Alarms in the Winter

From November 1 to March 1, a service call or equipment testing is not required prior to clearing the ISD OP alarms that are listed in Table 1 of this advisory. This action is being instituted because field data show that in many cases no equipment failure can be identified during the response to winter season OP alarms.

The required response to OP alarms is dependent on the date and is detailed below.

| Date Range        | Required Response to OP Alarms  |
|-------------------|---|
| Nov. 1 to Mar. 1  | No service or equipment testing is required prior to clearing the OP alarms listed in Table 1.  |
| Mar. 2 to Oct. 31 | Requirements of the current enforcement policy, District permit conditions, or ARB approved Phase II EVR Executive Orders and Veeder-Root ISD or Incon Vapor Recovery Monitoring (VRM) Installation, Operation and Maintenance (IOM) manuals apply. |



**Local districts will not require any service calls or equipment testing in response to ISD over pressure alarms that occur November 1 through March 1.**

During this four month period, there is no requirement for a service call or equipment testing prior to clearing any of the ISD OP alarms that are listed in Table 1 of this advisory. Because some districts have incorporated permit conditions that only allow certified service providers to reset or clear ISD warning and failure alarms, the GDF operator may need to have alarms reset by an authorized service provider or seek training by an authorized service provider on the proper procedure to clear and reset OP warning alarms.

**Local districts will require service calls and equipment testing in response to all ISD over pressure alarms that occur from March 2 to October 31.**

All OP alarms that occur from March 2 to October 31 will require the GDF operator to call for service if the alarm is still active 48 hours after the first appearance of the alarm.

**Record Keeping Requirements**

In order to properly document a required response to an ISD OP alarm (March 2-October 31) and avoid penalties imposed by the district, service providers must conduct the testing specified in the current enforcement policy, District Permit to Operate, or ARB approved Phase II EVR Executive Orders and Veeder-Root ISD or Incon VRM IOM manuals. As required by district regulations and permit conditions, both the service provider and GDF operator should: 1) maintain a written record of all the ISD alarms; and 2) if applicable, keep records of test results, equipment inspections, and equipment maintenance and repairs.

**This Advisory will remain in effect until formally rescinded by the Air Resources Board.**

**Questions**

If you have any questions regarding this advisory, please contact Ms. Melinda Weaver by phone at (916) 322-8918 or by email at [mweaver@arb.ca.gov](mailto:mweaver@arb.ca.gov).

California Air Resources Board  
Monitoring and Laboratory Division  
P.O. Box 2815  
Sacramento, CA 95812

Table 1: ISD Over Pressure Alarms Eligible for Relief from Service Call Requirements from November 1 to March 1

| Phase II<br>EVR System<br>Description  | Vapor<br>Processor<br>Description                        | ISD System<br>Description               | Description of Eligible ISD Over Pressure Related Alarm Condition |   |
|--|--|---|---|---|
|  |  |   | Message Displayed via ISD Console or<br>Manual Print Out          | Message Displayed via Electronic Access |
| Healy<br>(Vacuum<br>Assist)            | Healy Clean<br>Air Separator<br>(CAS)                    | INCON<br>Franklin<br>Fueling<br>Systems | Weekly Ullage Pressure W  | Weekly Ullage Pressure Warning          |
|  |  |   | Weekly Ullage Pressure F  | Weekly Ullage Pressure Failure          |
|  |  |   | Monthly Ullage Pressure   | Monthly Ullage Pressure Warning         |
|  |  |   | Monthly Ullage Pressure   | Monthly Ullage Pressure Failure         |
| VST<br>(Balance)                       | VST ECS<br>(membrane)                                    | Veeder-Root                             | ISD GROSS PRESSURE WARN   | CONTAINMENT GROSS OVER PRESSURE         |
|  |  |   | ISD GROSS PRESSURE FAIL   | CONTAINMENT GROSS OVER PRESSURE         |
|  |  |   | ISD DEGRD PRESSURE WARN   | CONTAINMENT PRESSURE DEGRADATION        |
|  |  |   | ISD DEGRD PRESSURE FAIL   | CONTAINMENT PRESSURE DEGRADATION        |
|  | Veeder-Root<br>Vapor<br>Polisher<br>(carbon<br>canister) | Veeder-Root                             | ISD VP PRESSURE WARN  | VAPOR PROCESSOR OVER PRESSURE           |
|  |  |   | ISD VP PRESSURE FAIL  | VAPOR PROCESSOR OVER PRESSURE           |
|  |  |   | ISD GROSS PRESSURE WARN   | CONTAINMENT GROSS OVER PRESSURE         |
|  |  |   | ISD GROSS PRESSURE FAIL   | CONTAINMENT GROSS OVER PRESSURE         |
|  | HIRT VCS<br>100<br>(thermal<br>oxidizer)                 | Veeder-Root                             | ISD DEGRD PRESSURE WARN   | CONTAINMENT PRESSURE DEGRADATION        |
|  |  |   | ISD DEGRD PRESSURE FAIL   | CONTAINMENT PRESSURE DEGRADATION        |
|  |  |   | ISD VP PRESSURE WARN  | VAPOR PROCESSOR OVER PRESSURE           |
|  |  |   | ISD VP PRESSURE FAIL  | VAPOR PROCESSOR OVER PRESSURE           |
| EMCO<br>Wheaton<br>Retail<br>(Balance) | Healy Clean<br>Air Separator<br>(CAS)                    | INCON<br>Franklin<br>Fueling<br>Systems | ISD GROSS PRESSURE WARN   | CONTAINMENT GROSS OVER PRESSURE         |
|  |  |   | ISD GROSS PRESSURE FAIL   | CONTAINMENT GROSS OVER PRESSURE         |
|  |  |   | ISD DEGRD PRESSURE WARN   | CONTAINMENT PRESSURE DEGRADATION        |
|  |  |   | ISD DEGRD PRESSURE FAIL   | CONTAINMENT PRESSURE DEGRADATION        |
| EMCO<br>Wheaton<br>Retail<br>(Balance) | HIRT VCS<br>100<br>(thermal<br>oxidizer)                 | INCON<br>Franklin<br>Fueling<br>Systems | ISD GROSS PRESSURE WARN   | CONTAINMENT GROSS OVER PRESSURE         |
|  |  |   | ISD GROSS PRESSURE FAIL   | CONTAINMENT GROSS OVER PRESSURE         |
|  |  |   | ISD DEGRD PRESSURE WARN   | CONTAINMENT PRESSURE DEGRADATION        |
|  |  |   | ISD DEGRD PRESSURE FAIL   | CONTAINMENT PRESSURE DEGRADATION        |
| EMCO<br>Wheaton<br>Retail<br>(Balance) | HIRT VCS<br>100<br>(thermal<br>oxidizer)                 | INCON<br>Franklin<br>Fueling<br>Systems | Weekly Ullage Pressure W  | Weekly Ullage Pressure Warning          |
|  |  |   | Weekly Ullage Pressure F  | Weekly Ullage Pressure Failure          |
|  |  |   | Monthly Ullage Pressure   | Monthly Ullage Pressure Warning         |
|  |  |   | Monthly Ullage Pressure   | Monthly Ullage Pressure Failure         |

NOTE: The INCON ISD "Weekly Ullage Pressure Leak Test Warning" and the INCON ISD "Weekly Ullage Pressure Leak Test Failure" are not listed in Table 1. These alarms require a response by a certified contractor and should not be reset by the GDF operator.



[illegible]



| State                          | 2008 O <sub>3</sub> Std Attainment Status                | Waiver for New/Reconstructed Stations   | Removal of Existing Stage II Systems   | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | SIP Amendment  | SIP Amendment Processed by EPA |
|--------------------------------|--|---|--|------|------|------|------|------|------|------|------|--|--------------------------------|
| Arizona                        | NAA Marginal   | Enforcement discretion policy (2/27/14 memo) (also no longer required per House Bill 2128)                                | House Bill 2128 allows existing systems to be decommissioned as early as 10/1/16 and requires decommissioning by 9/30/18   |      |      |      |      |      |      |      |      | SIP Amendment has been drafted; public hearing on June 3 |                                |
| Connecticut                    | NAA Marginal   | Compliance waiver as of 2/2/12 (and new installs prohibited after 6/18/13 by Public Act No. 13-120)                       | All existing systems must be decommissioned no later than July 1, 2015   |      |      |      |      |      |      |      |      | Notice of Intent to Amend                                |                                |
| Delaware                       | NAA Marginal   | Agenda for 4/9/14 meeting mentions that they "plan to fast track a change to address new GDFs"                            | 6/25/14 DAO meeting to "review draft regulatory language with the committee to address new GDFs and discussions with stakeholders regarding next steps for existing facilities"  |      |      |      |      |      |      |      |      |  |                                |
| Florida                        | Attainment   | Exempted  | Rule amendments adopted in May 2007 which allowed removal on Jan. 1, 2010  |      |      |      |      |      |      |      |      |  | Approved 6/1/09 (74 FR 26103)  |
| Georgia                        | NAA Marginal   | Regulations no longer require Stage II  | Regulations amended to require decommissioning between 5/1/14 and 4/30/16  |      |      |      |      |      |      |      |      |  |                                |
| Illinois                       | NAA Marginal   | Rules adopted 12/19/13 no longer require Stage II   | Decommissioning Rules Adopted 12/19/13 require decommissioning between 2014 and 2016   |      |      |      |      |      |      |      |      |  |                                |
| Indiana                        | NAA Marginal (in the vicinity of Chicago and Cincinnati) | 4/12/13 enforcement discretion policy   | Proposed rule removes Stage II requirements effective 4/1/16; public hearing scheduled for 9/10/14   |      |      |      |      |      |      |      |      |  |                                |
| Maine                          | Attainment   | Stage II repealed as of 1/1/12  | Maine law 38 M.R.S.A. 585-E(7) required removal of existing Stage II systems by Jan. 1, 2013   |      |      |      |      |      |      |      |      |  |                                |
| Maryland                       | NAA Mod-Marg   | 3/6/14 letter from MDE identifies enforcement discretion for new/modified systems; associated rules are under development | Stakeholder meetings being held re existing systems  |      |      |      |      |      |      |      |      |  |                                |
| Massachusetts                  | Attainment except for Dukes County                       | 8/1/12 policy identifies enforcement discretion for new/modified systems  | 6/21/13 enforcement discretion policies allows existing GDFs to decommission Stage II beginning 7/1/13 if certain criteria are met (including installation of CARB EVR PV valves and rotatable product and vapor adaptors)                                 |      |      |      |      |      |      |      |      |  |                                |
| Missouri                       | NAA Marginal   | New and reconstructed (50% or more)   | Decommissioning allowed as of 3/15/13 (by hyperlinked 1/8/13 policy memo); corresponding regulations proposed 4/1/14 ( <a href="http://dnr.mo.gov/env/apcp/rulemaking.html">http://dnr.mo.gov/env/apcp/rulemaking.html</a> ), comment period closes 6/5/14 |      |      |      |      |      |      |      |      |  |                                |
| New Hampshire                  | Attainment   | Env. Or. 505.02 exempts facilities constructed on/after 1/1/12  | Env. Or. 505.02 allows for Stage II decommissioning (required by 12/22/15, except for political subdivisions)  |      |      |      |      |      |      |      |      | Drafted 3/25/13  | Approved 5/29/14 (79 FR 30735) |
| New Jersey                     | NAA Marginal   | June 2013 mtg w stakeholders  | June 2013 mtg w stakeholders   |      |      |      |      |      |      |      |      |  |                                |
| New York                       | NAA Marginal   | Enforcement discretion policy exempts new/reconstructed facilities  | Enforcement discretion policy allows decommissioning after 1/1/11  |      |      |      |      |      |      |      |      |  |                                |
| North Carolina                 | NAA Marginal   | Already in place  | In 2008, North Carolina repealed its contingency measure for Stage II (which had never been activated)   |      |      |      |      |      |      |      |      | Submitted 9/18/09  | Approved 9/23/13 (78 FR 58184) |
| Ohio                           | NAA Marginal   | OAC 3745-21-09(DD)(4)(g) exempts new facilities after 10/1/12   | OAC 3745-21-09(DD)(5) allows decommissioning after 1/1/14 and requires it by 1/1/17  |      |      |      |      |      |      |      |      |  |                                |
| Pennsylvania                   | NAA Marginal   | As of 8/15/12 DEP is not enforcing for new GDFs   | Some discussion in 2012  |      |      |      |      |      |      |      |      |  |                                |
| Rhode Island                   | Attainment   | New facilities exempted as of 6/14/12 and prohibited from installing Stage II after 12/25/13                              | Existing Stage II systems may be removed per Regulation 11 and must be removed by 8/22/17 unless granted an exemption  |      |      |      |      |      |      |      |      |  |                                |
| Tennessee                      | NAA Marginal   | New and reconstructed – variances granted on a case by case basis   |  |      |      |      |      |      |      |      |      |  |                                |
| Texas                          | Mixed  | Enforcement discretion in effect  | Decommissioning can begin in 2014 and all Stage II systems must be decommissioned by 2018  |      |      |      |      |      |      |      |      | Proposed in Federal Register, 12/30/13                   | Approved 3/17/14 (79 FR 14611) |
| Vermont                        | Attainment   | Stage II repealed eff. Jan. 1, 2013   | Stage II repealed eff. Jan. 1, 2013  |      |      |      |      |      |      |      |      |  |                                |
| Virginia (Northern)            | NAA Marginal   | Enforcement discretion in effect  | Agency is fast-tracking regulatory revisions to rescind Stage II requirements effective immediately.   |      |      |      |      |      |      |      |      | Filed in 2014  |                                |
| Virginia (Richmond NAA)        |  | Enforcement discretion in effect  | Potential to decommission Stage II equipment if performing modifications (see enforcement discretion document). Agency is fast-tracking regulatory revision to rescind Stage II effective January 1, 2017  |      |      |      |      |      |      |      |      | Filed in 2014  |                                |
| Washington (selected counties) | Attainment   | Joint Legislative Audit and Review Committee (JLARC) is reviewing   | Joint Legislative Audit and Review Committee (JLARC) is reviewing  |      |      |      |      |      |      |      |      |  |                                |
| Wisconsin                      | NAA Marginal   | New facilities exempted by rule   | Stage II no longer required on existing facilities   |      |      |      |      |      |      |      |      | Submitted 11/12/12                                       | Approved 11/4/13 (78 FR 65875) |





## MARYLAND DEPARTMENT OF THE ENVIRONMENT

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Martin O'Malley  
Governor

Robert M. Summers, Ph.D.  
Secretary

Anthony G. Brown  
Lieutenant Governor

March 6, 2014

The Honorable James DeGrange, Sr.  
101 James Senate Office Building  
11 Bladen Street  
Annapolis, MD 21401

Dear Senator DeGrange:

I am writing in follow up to our recent discussion about the status of the Department's draft Stage II regulation to clarify the manner in which the Department intends to proceed with respect to enforcement of the existing Stage II requirements. As we discussed, I met today with Ellen Valentino and Pete Horrigan of the Mid-Atlantic Petroleum Distributors Association (MAPDA) and Drew Cobbs of the American Petroleum Institute (API). We agreed to take the following approach to address their concerns.

Existing regulations codified in COMAR 26.11.24 require gasoline dispensing facilities in the State to install, certify, maintain and test Stage II systems. On May 16, 2012, EPA released the final rule that determined vehicle onboard refueling vapor recovery technology (ORVR) would be in widespread use nationally throughout the motor vehicle fleet in June 2013. This EPA action allows states to discontinue the use of Stage II vapor recovery systems at gasoline dispensing facilities. EPA's August 7, 2012, guidance required MDE to conduct a Maryland-specific analysis to determine the time frame when a sufficient percentage of the State's vehicle fleet will be equipped with ORVR so as to make Stage II systems redundant. Based on MDE's analysis, Maryland would not be eligible to discontinue the use of Stage II systems until later this decade. Nonetheless, because of the cost associated with the installation of new Stage II systems and the diminishing air quality benefits as the percentage of the Maryland fleet of passenger cars and light duty trucks equipped with ORVR continues to increase, the Department will continue to exercise enforcement discretion to allow *new or modified gasoline dispensing facilities* to be constructed with appropriate new technologies but without Stage II systems. A *new or modified gasoline dispensing facility* is one that on or after March 6, 2014:

- (1) begins dispensing fuel for the first time;
- (2) excavates below a shear valve or tank pad in order to repair or replace its Stage II system or an underground storage tank;
- (3) installs a new dispenser system manufactured without a Stage II system; or
- (4) under goes a major system modification consisting of the replacement, repair or upgrade of at least 50% of a facility's Stage II vapor recovery system.



A new or modified gasoline dispensing facility that discontinues all or part of its existing Stage II system is not eligible for enforcement discretion under this policy unless the owner or operator of the facility notifies the Department in writing that it intends to act in accordance with this policy prior to removing or discontinuing all or part of its existing Stage II system. All notifications should be directed to Maryland Department of the Environment, Air and Radiation Management Administration, Air Quality Compliance Program and include the information requested on a form to be provided by MDE and made available on its web page.

All existing facilities that are not eligible for enforcement discretion and are currently equipped with Stage II systems must continue to certify, maintain, test and comply with all Stage II requirements until such time as the Department repeals or otherwise revises existing regulatory requirements through rulemaking. In this regard, it is our intention to continue the ongoing stakeholder input process to achieve consensus on a future regulatory approach. Our goal in phasing out the Stage II program is to not significantly impact our State Implementation Plan.

Thank you for the opportunity to provide you with this important information. If you have any questions, please contact me at 410-537-3084, or [robert.summers@maryland.gov](mailto:robert.summers@maryland.gov).

Sincerely,



Secretary

cc: Ellen Valentino, MAPDA  
Pete Horrigan, MAPDA  
Drew Cobbs, API  
George Aburn, MDE  
Horacio Tablada, MDE  
Jeff Fretwell, MDE



## MARYLAND DEPARTMENT OF THE ENVIRONMENT

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### M E M O R A N D U M

**TO:** Air & Radiation Management Administration (ARMA) – Air Quality Compliance Program  
Land Management Administration (LMA) – Oil Control Program

**FROM:** Tad Aburn, Director, ARMA  
Horacio Tablada, Director, LMA

**DATE:** March 20, 2014

**SUBJECT:** Stage II Vapor Recovery Systems – Enforcement Discretion Policy

The purpose of this memorandum is to advise compliance staff in the ARMA Air Quality Compliance Program and the LMA Oil Control Program of the Department's enforcement policy as it relates to enforcement of Stage II Vapor Recovery Systems. The Department has adopted a formal enforcement discretion policy regarding requirements for Stage II Vapor Recovery Systems as they apply to newly constructed gasoline dispensing facilities and facilities undergoing significant modification in accordance with this policy. This policy was effective March 6, 2014.

#### **Background**

Existing regulations codified in COMAR 26.11.24 require gasoline dispensing facilities in the State to install, certify, maintain, and test Stage II systems. These regulations are a part of Maryland's State Implementation Plan under the federal Clean Air Act. On May 16, 2012, EPA released the final rule that determined vehicle onboard refueling vapor recovery technology (ORVR) would be in widespread use nationally throughout the motor vehicle fleet in June 2013. This EPA action allows states to discontinue the use of Stage II vapor recovery systems at gasoline dispensing facilities, provided that the State is able to demonstrate that the loss of emission reductions associated with the discontinuation of Stage II will be offset through implementation of other strategies.



### Exercise of Enforcement Discretion

Because of the cost associated with the installation of new Stage II systems and the diminishing air quality benefits as the percentage of the Maryland fleet of passenger cars and light duty trucks equipped with ORVR continues to increase, the Department will exercise enforcement discretion to allow *new or modified gasoline dispensing facilities* to be constructed with appropriate new technologies but without Stage II systems. A *new or modified gasoline dispensing facility* is one that on or after March 6, 2014:

- 1) begins dispensing fuel for the first time;
- 2) excavates below a shear valve or tank pad in order to repair or replace its Stage II system or an underground storage tank;
- 3) installs a new dispenser system manufactured without a Stage II system; or
- 4) undergoes a major system modification consisting of the replacement, repair or upgrade of at least 50% of a facility's Stage II vapor recovery system.

A new or modified gasoline dispensing facility that discontinues all or part of its existing Stage II system is not eligible for enforcement discretion under this policy unless the owner or operator of the facility notifies the Department in writing on the attached form that it intends to act in accordance with this policy prior to removing or discontinuing all or part of its existing Stage II system. The form must be completed as instructed and sent to the appropriate ARMA and LMA programs as indicated.

All existing facilities that are not eligible for enforcement discretion and are currently equipped with Stage II systems must continue to certify, maintain, test, and comply with all Stage II requirements until such time as the Department repeals or otherwise revises existing regulatory requirements through rulemaking.

If you are asked, it is important for the industry to understand that this MDE policy does not protect them from EPA action or citizen lawsuits.

Please direct any questions concerning this Enforcement Discretion Policy to the ARMA Air Quality Compliance Program at 410-537-3231.

**Sunoco** Statement for the DNREC Hearing on August 28, 2014:

Sunoco Inc. (R&M) appreciates the opportunity to provide a statement regarding the proposed changes to Regulation 1124 Section 36.0 "Stage II Vapor Recovery". Sunoco owns and/or operates approximately 10 locations in Delaware, including the Delaware Turnpike and we also have approximately 10 locations that are branded Sunoco and owned and/or operated by other entities including small mom and pop type dealers.

Sunoco previously submitted written comments with details of the issues so I would like to take this opportunity to provide a broad overview of the issues with the proposed regulations.

1. **Determine the Need** – It is Sunoco's position that the Department should utilize the EPA Guidance document entitled "Guidance on Removing Stage II Gasoline Vapor Control Programs from State Implementation Plans and Assessing Comparable Measures" to determine if any additional measures are required to provide comparable measures for removing Stage II Vapor Recovery. The EPA states that the incremental emissions control that Stage II achieves beyond Onboard Refueling Vapor Recovery (ORVR) is de minimis if it is less than 10 percent of the area-wide emissions associated with refueling highway motor vehicles. Surrounding states have not required any further offsets for removing Stage II Vapor recovery; however, if it is determined that further offsets are needed in Delaware, then move forward with reviewing options.
2. **Reviewing Options** – It is Sunoco's position that the Department should fully review all options that are available. Once Stage II is removed the Stage I system is much simpler and the likely parts that could cause a tank to not be tight are likely fill caps, drain valves and fittings. An alternative would be to have stations complete a monthly inspection of the easily accessible items.
3. **Test New Technology** – If the Department scientifically determines that additional measures are needed to control gas stations and after reviewing all the options determines that a pressure monitoring system is the best fit, the new technology should be tested before it is put into a regulation. The proposed pressure monitoring system is only used in the State of California on systems with Stage II Vapor Recovery. Although the California Air Resource Board (CARB) requires equipment be tested for 180 days prior to approval, the test period did not find all the issues with false alarms in the winter. There were so many false alarms in the winter that CARB had to write more than one Special Advisory that allowed station owners to ignore certain types of alarms in the winter. That was after the 180 days of testing and CARB Approval. The climate is much different in California and so is their fuel. California uses a specially formulated fuel as compared to the Federal Reformulated Gas that we have in Delaware. The California fuel has a lower vapor pressure than our fuel does in the summer time, which creates concern for false

alarms in the summer months if these systems were used in Delaware. According to tables within the aforementioned EPA guidance document, it lists California and Delaware in separate Regions with average temperatures over 10 degrees colder in Delaware overall which factors in winter and summer. Will 10 degrees colder in the summer or winter make a difference with respect to false alarms? It needs to be tested. Lastly, if the Department wants to forge ahead with equipment which has neither been tested nor certified for use with a non-Stage II system then the Department needs to allow additional flexibility in the regulation to account for the potential false alarms and issues that may arise by using untested equipment. For example, California allowed operators 48 hours to see if alarms cleared out on their own; however, Delaware's proposed regulation does not have any such contingencies. Currently, the proposed regulation states that if the site has two alarms within 2 weeks that the site needs to come up with a resolution plan. One of the options is to install a Pressure Management System. In a matter of two weeks a site could have several false alarms which would move them up to installing a Pressure Management System that in our experience at our site in California cost a little over \$60,000. Sunoco has offered to assist the State by providing a test site and the offer still stands.

4. **New Documents** – The Department posted two new documents regarding the proposed regulations late last week entitled Stage II Cost Benefit Analysis and Delaware Break-Even Point Analysis. Based on a brief review there is some concern as to why one equation was used to calculate the statewide savings emissions based on breathing losses of all tanks and statewide throughput (which incorrectly assumes all tanks are leaking) and a different equation was used to calculate the cost effectiveness of a pressure management (not monitoring) system. As previously stated a pressure management system with carbon canisters cost Sunoco a little over \$60,000 to install at a site in California in 2009 and the Department price estimate is \$12,000. After a more thorough review of the newly posted documents, Sunoco may have a second letter with additional comments to submit to the Department before the comment period closes.

Thank you.



American  
Lung  
Assoc.  
Ex. 1

**A6 (5 pgs)**



**Statement of  
Kevin M. Stewart  
Director of Environmental Health  
American Lung Association in Delaware**

**Submitted to  
Department of Natural Resources and Environmental Control  
Division of Air Quality  
Regarding its Proposal of November 26, 2013  
to Revise Section 36 "Stage II Vapor Recovery"  
of 7 DE Admin Code 1124 "Control of Volatile Organic Compound Emissions."**

**August 28, 2014**

The American Lung Association in Delaware, in commenting on the proposed revisions to Section 36 of Regulation 1124, advocates for and represents not only on the order of a hundred thousand Delawareans who suffer from chronic lung disease, but also the millions, here and throughout the region, who desire to breathe clean air and so protect their good health.

Our predecessor agency was founded over a century ago to fight tuberculosis. The Lung Association is now dedicated to our broader mission of saving lives by improving lung health and preventing lung disease. We have been fighting for relief from ambient air pollution since the middle of the last century.

The following constitutes our statement with respect to the proposed revisions. Although we are endeavoring to make our position as clear as possible, the Lung Association will do its best to respond to any inquiries from the Department of Natural Resources and Environmental Control (the Department) for clarification or for further information.

The American Lung Association has recognized, with the U. S. Environmental Protection Agency (EPA) and the Department, that existing Stage II vapor recovery systems were gradually being made obsolete by the increasing prevalence of vehicles equipped with on-board refueling vapor recovery (ORVR) technology. As such, we support the Department's recognition of that fact and its proposal to establish an appropriate regulatory regime for use in the post-Stage II era. Specifically, the American Lung Association in Delaware supports the Department's proposal that continuous pressure monitoring (CPM) be substituted for the current annual pressure decay testing, in conjunction with an orderly process for decommissioning Stage II systems.



As vapor growth in storage tanks at gasoline dispensing facilities (GDFs or stations) has become an increasing problem as use of ORVR has become widespread in the vehicle fleet, deficiencies of the current facility inspection process have become increasingly apparent. For example, our understanding is that the Department has data showing that on the order of 70% of Delaware stations leak at the time of the annual pressure decay testing. The American Lung Association regards such a failure rate to be grossly unacceptable. We are aware that a range of 2% to 70% failure rate for the pressure decay test was cited by one of the members of the Department's review committee for this proposed revision, so if nothing else it is plain that the current system for evaluating compliance may possess huge uncertainties regarding the degree of emission control. Such variability in compliance is also unacceptable.

We make two observations here:

- 1) In the case in which the 2% figure is more representative of the current failure rate, then the proposed CPM system will pay for itself, compared to the status quo, in a handful of years for the great majority of stations, since the annual pressure decay testing would no longer be required.
- 2) However, if a failure rate at one year of 70% is more representative, then this is simply a sign of a system for inspection and compliance that is broken and sorely in need of repair. We understand that it has been claimed that simple tightening of "drain valves on spill buckets, Stage I adaptors, and ATG caps" accounts for much of these problems. Why such frequent and easily fixed failures are not already being promptly identified and routinely immediately addressed rather than waiting for the annual pressure decay test to make the need to fix them obvious is clearly an unacceptable state of affairs. Passing the annual pressure decay test is not a meaningless exercise. The goal all along should have been that that test was rarely failed, and to achieve that required attention to the system functioning well throughout the year. And to the extent that even more egregious problems exist—as in the case of a "pressure relief system" that was simply an open pipe without a p/v valve—such problems would again show the need for there to be far better oversight than there has been heretofore. The Lung Association believes that the level of demonstration of performance and of requirements for response inherent in the use of CPM and in the proposed revisions regarding assessments, alarms, and corrective actions help to afford that necessary degree of oversight.

I would be remiss if I did not take the opportunity to emphasize *why* it is important to control these emissions.

In its annual *State of the Air* report, published this past spring, the American Lung Association found that all of Delaware earned a failing grade for ozone, even as the current National Ambient Air Quality Standard for this pollutant has long been recognized by the medical and scientific community as being inadequate to protect public health. Higher ozone concentrations are, of course, the result in part from releases to the atmosphere of volatile organic compounds (VOCs), the very compounds constituting the principal releases from GDFs.

Researchers have repeatedly found that the risk of premature death increased with higher levels of ozone. Newer research has confirmed that ozone increased the risk of premature death even

when other pollutants also exist. Even at low levels, exposure to ozone was associated with deaths from cardiovascular disease, strokes, and respiratory causes.

As the Department has recognized, ozone can also cause health problems that can be felt right away. Immediate problems—in addition to increased risk of premature death— include:

- shortness of breath, wheezing and coughing;
- asthma attacks;
- increased risk of respiratory infections;
- increased susceptibility to pulmonary inflammation;
- increased likelihood to suffer from respiratory allergies; and
- increased need for people with lung diseases, such as asthma or chronic obstructive pulmonary disease (COPD), to receive medical treatment, to go to emergency rooms, and to be hospitalized.

Scientists are also finding that long-term exposure to ozone is associated with

- increased risk of premature death from respiratory and cardiovascular disease;
- increased hospitalization of children for asthma;
- increased risk of asthma induction among adolescents; and
- increasing evidence that ozone may result in lower birth weight and decreased lung function among newborns.

Nationwide, each year ambient air pollutants including ozone cause millions of lost work days, hundreds of thousands of asthma attacks, and tens of thousands of premature deaths.

In addition to recognizing the need to address GDF emissions as a precursor to ozone, we also underscore the need for properly maintained systems to limit the public's direct exposure to the components of gasoline that are hazardous air pollutants (HAPs or "air toxics"). We recognize that HAP exposures associated with gasoline include, but are not limited to, benzene, toluene, ethylbenzene, and xylenes, and that EPA's analysis has found that GDFs emit on the order of 25,000 tons of emissions nationally of just these four pollutants.

Many toxic air pollutants can cause cancer, but they also pose risks for an extensive array of non-cancer health effects. Benzene is recognized as a known human carcinogen, while ethylbenzene is considered a possible human carcinogen. Long-term exposures to benzene can cause leukemia, a blood cancer, and other blood disorders such as anemia and depressed lymphocyte count.

According to the Agency for Toxic Substances and Disease Registry (ATSDR), non-cancer health effects resulting from exposure to HAPs include

- irritation of the skin, eyes, nose, throat, and respiratory tract;
- dizziness, nausea, and vomiting;
- difficulty in breathing, impaired lung function and respiratory symptoms;
- adverse effects on the nervous system, impairment of memory and neurological function, including effects on hearing, speech, vision, and motor coordination;
- effects on vital organs, such as damage to the liver and kidneys; and
- developmental disorders.

Furthermore, since children generally display greater sensitivity to environmental carcinogens than do adults, exposure to HAPs may put children at correspondingly greater risk than adults. Communities of color and poorer people also appear to face higher risk, since research shows that these minorities are more likely to live both in areas that do not meet federal ambient air quality standards and in areas with above average numbers of air-polluting facilities. Both African Americans and Hispanics have been found to be more likely than Caucasians to live in areas with high levels of air toxics.

Indeed, more specifically, the Northeast States for Coordinated Air Use Management (NESCAUM) has expressed concern about how a state or local air pollution control agency's request to retire Stage II will impact environmental justice communities, recognizing that GDFs pose significant potential for public exposure to VOCs and HAPs.

The concern is amplified by the fact of the public's nearness to the sources: Not only are many of these facilities located in residential areas, including environmental justice communities, but research shows that individuals living in close proximity to GDFs are exposed to elevated levels of several HAPs. As one might expect, measurements show that the highest short-term exposures to benzene occur during refueling operations.

These realities should inspire the Department and GDF owners and operators to take appropriate care in transitioning from the existing Stage II program to the new regulatory regime. For example, the possibility should not remain unexplored that vehicle fleets refueling at GDFs in neighborhoods of lower socioeconomic status might tend to be older, and hence not yet at the same higher prevalence of ORVR equipment as the population as a whole. For such local scenarios, facilities equipped with properly maintained Stage II systems may substantially mitigate public exposures to these pollutants for longer than the statewide average might indicate.

I take a moment to note that the Department, through this revision, is attempting to step up oversight and enforcement of the systems in place to control emissions from GDFs, and this is something that the American Lung Association always supports. We also encourage the Department to continue to pursue improvements in other areas that may not be addressed by the proposed revision, from technological changes such as low-permeability refueling hoses and non-dripping nozzles to public education programs to deal with poor behaviors that defeat the purpose of these much-needed pollution abatement measures.

In short, the American Lung Association in Delaware supports a solution that works in the real world. As always, if suggestions are made for air pollution control techniques that demonstrably accomplish the same or increased reductions in the same time frame but that are less burdensome for the affected facilities, the Lung Association is certainly open to their being considered. But make no mistake: There are, today, serious deficiencies in how air pollution from this source category is controlled. And we find that the proposed revisions to the regulation go a long way, not only toward dealing with the problem of Stage II incompatibility excess emissions, but also toward dealing with those systemic deficiencies.

In conclusion, we ask the Department in its deliberations to remember that air pollution worsens and causes disease and even death for real people. In Delaware, the populations at increased risk from air pollution include:

- 200,000 infants, children and teens under 18
- 140,000 persons aged 65 and above
- 18,000 children with asthma
- 70,000 adults with asthma
- 50,000 adults with chronic obstructive pulmonary disease (COPD)
- 70,000 with cardiovascular disease (excluding hypertension)
- 70,000 persons with diabetes, and
- 110,000 persons living in poverty.
- Pregnant women, their developing unborn, persons who work or exercise outdoors, and many others with existing health problems are also at risk.

While we estimate that on the order of about half of this state's population is described by at least one of these categories, every one of these hundreds of thousands is a real person, not a nameless statistic. Every one of these people is a family member, a neighbor, a coworker, a friend – someone whose health and life deserve to be protected. Therefore, the American Lung Association in Delaware strongly supports the proposed revisions and encourages the Department to resist making weakening changes to them.

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